User Manual

March 2010 Revision 1.4

Odysse
Hardware System

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Manual Version 1.4

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Safety

IMPORTANT SAFETY INSTRUCTIONS

1. **Read these instructions carefully. Save these instructions for future reference.**
2. **Follow all warnings and instructions marked on the product.**
3. **Do not use this product near water.**
4. **Do not place this product on an unstable cart,stand,or table.The product may fall, causing serious damage to the product.**
5. **Slots and openings in the cabinet and the back or bottom are provided for ventilation;to ensure reliable operation of the product and to protect it from overheating. These openings must not be blocked or covered.The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface.This product should never be placed near or over a radiator or heat register,or in a built-in installation unless proper ventilation is provided.**
6. **This product should be operated from the type of power indicated on the marking label.If you are not sure of the type of power available, consult your dealer or local power company.**
7. **Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.**
8. **Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock.Never spill liquid of any kind on the product.**

FCC

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference

(2) This device must accept any interference received, including interference that may cause undesired operation.

CE Mark

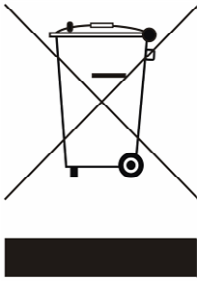
CE This device complies with the requirements of the EEC directive 2004/108/EC with regard to “Electromagnetic compatibility” and 2006/95/EC “Low Voltage Directive”.

Caution on Lithium Batteries

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

LEGISLATION AND WEEE SYMBOL

2002/96/EC Waste Electrical and Electronic Equipment Directive on the treatment, collection, recycling and disposal of electric and electronic devices and their components.



The crossed dustbin symbol on the device means that it should not be disposed of with other household wastes at the end of its working life. Instead, the device should be taken to the waste collection centres for activation of the treatment, collection, recycling and disposal procedure.
To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract.
This product should not be mixed with other commercial wastes for disposal.

Table of Contents

1. Item Checklist 7

1.1. Standard Items 7

1.2. Optional Items 7

2. System View 9

2.1. Front view 9

2.2. Rear View 10

3. Drivers Installation 11

3.1. Driver List 11

3.2. Chipset Driver Installation 11

3.3. VGA Driver Installation 13

3.4. Audio Driver Installation 15

3.5. LAN Driver Installation 16

3.6. USB2.0 Driver Installation 17

3.7. ELO Touch Screen Driver Installation 19

4. Peripherals Installation 22

4.1. MSR 22

4.2. Cash Drawer Installation 23

4.3. VFD Customer Display 25

4.4. Second Display Installation 27

4.5. Compact Flash Card 30

5. System Disassembly 31

5.1. Replace HDD 31

5.2. Install second HDD 34

5.3. Replace I/O Board 35

5.4. Replace CD-ROM 36

5.5. Replace Power Supply 37

5.6. Replace Memory & CPU 38

5.7. Remove Motherboard 39

5.8. Remove the Touch Board 42

5.9. Remove the Inverter Board 43

5.10. Remove the Touch Panel 44

6. Jumper Settings 45
6.1. Main Board Layout 45
6.2. Jumper Settings for Main Board 46
6.3. Jumper Setting for I/O Board 48
6.4. Connectors Location 50
6.5. Connectors Definition 51

7. Default BIOS Settings 52
7.1. BIOS Setup Utility 52
7.2. Starting the BIOS Setup 52
7.3. When a Problem Occurs 52
7.4. BIOS Main Menu 53

8. BIOS Updating Procedure 55

9. Troubleshooting 56

Appendix A: Specification 62

Appendix B: Dimensional Drawings 64

Appendix C: Customer Display Command Settings 66

1. Item Checklist

Take the system unit out of the carton. Remove the unit from the carton by holding it by the foam inserts. The following contents should be found in the carton:

1.1. Standard Items

☐

a. Driver CD

☐

b. Power Cord

1.2. Optional Items

☐

a. Magnetic Card Reader

☐

b. iButton Dallas Key Reader

☐

c. Magnetic Card +
iButton Dallas Key Reader

☐

d. RFID Reader

☐

e. Biometric Reader (fingerprint)

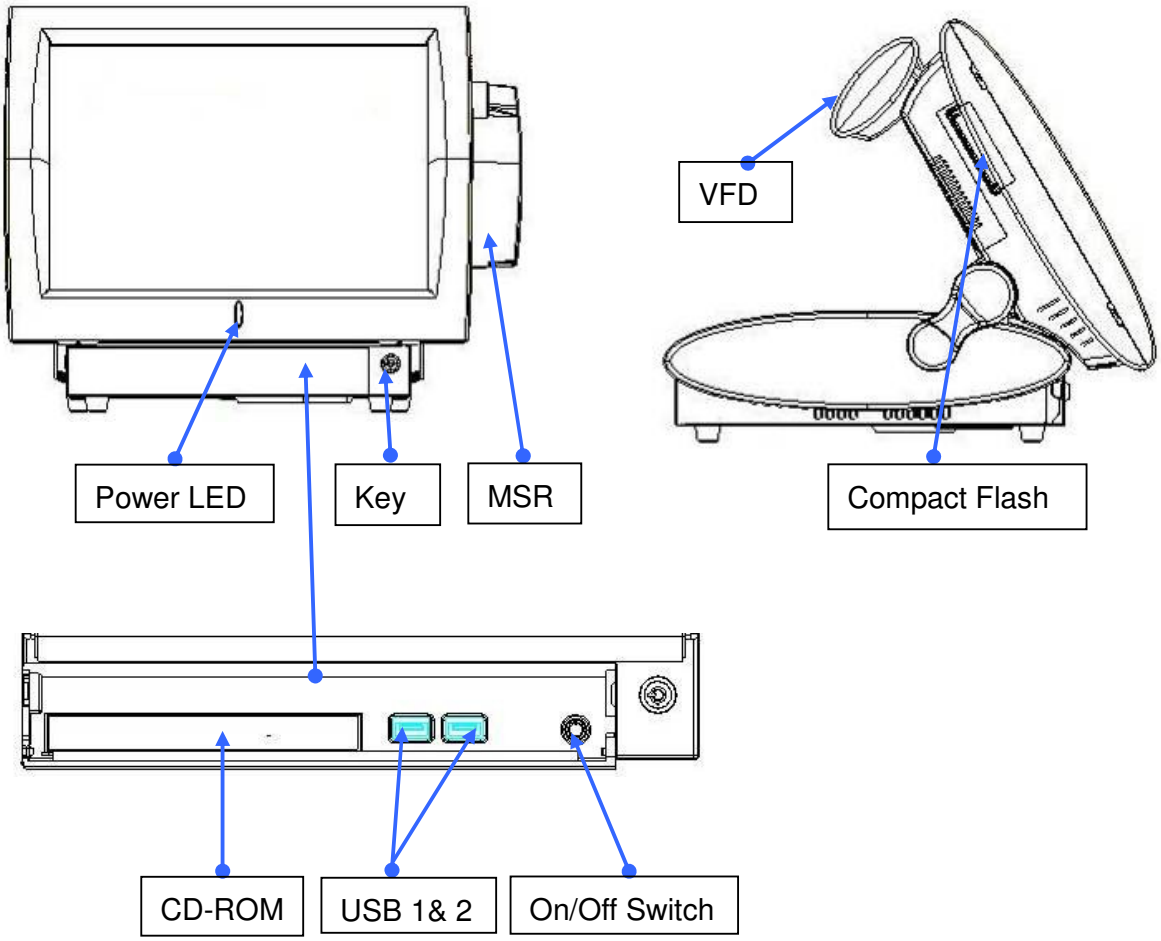
f. Customer Display (VFD)

☐

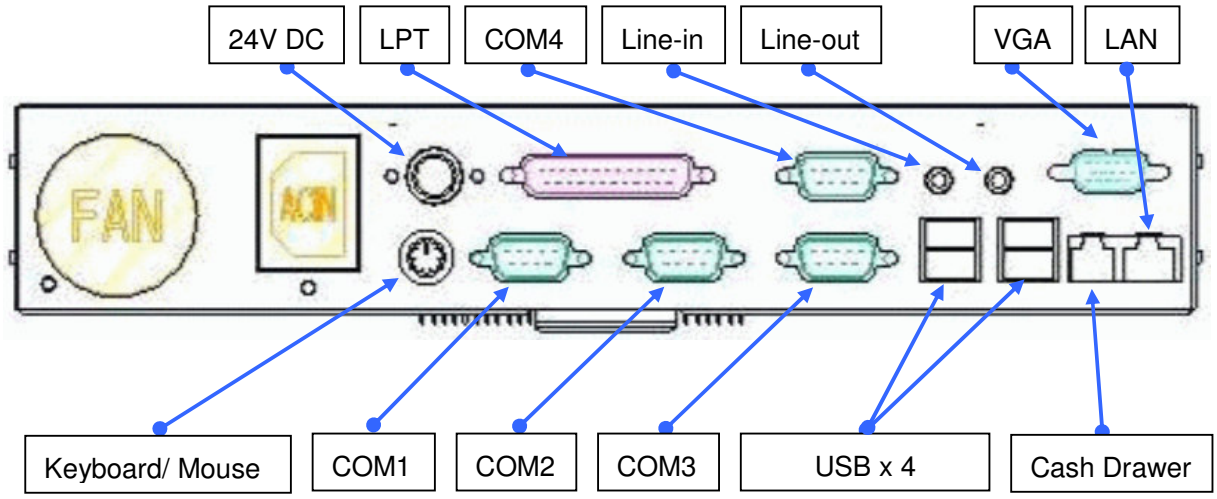
g. 2nd Display

2. System View

2.1. Front view



2.2. Rear View


24V DC
LPT
COM4
Line-in
Line-out
VGA
LAN
FAN
Keyboard/ Mouse
COM1
COM2
COM3
USB x 4
Cash Drawer

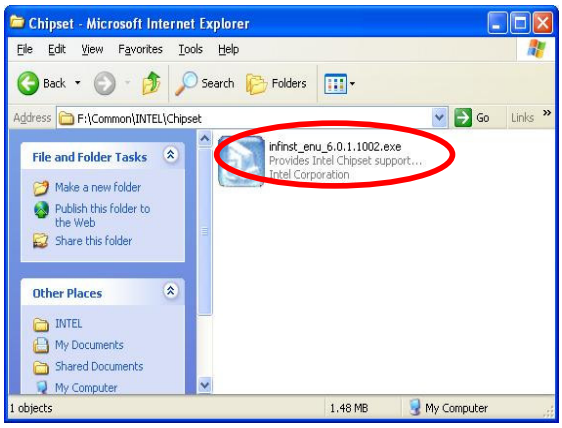
3. Drivers Installation

3.1. Driver List

Folder/File	File Description
<CD>:\Odysse.htm	Odysse Driver List
<CD>:\Common\INTEL\Chipset	Chipset Driver
<CD>:\Common\INTEL\VGA\i85x	VGA Driver
<CD>:\Common\Ac97_codec\Realtek\ALC202A	Audio Driver
<CD>:\Common\Lan_driver\REaltek_PCI	10/100Mb LAN Driver
<CD>:\Common\INTEL\USB20	USB 2.0 Driver
<CD>:\Common\Elo_Touch	ELO Touch Screen Driver

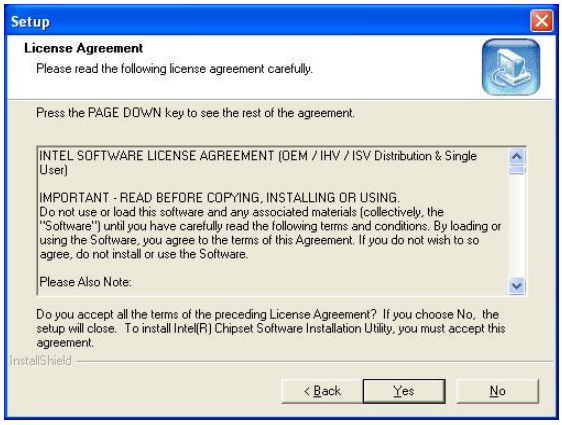
The following procedures are for Windows 2000/XP, other platforms are similar.

3.2. Chipset Driver Installation

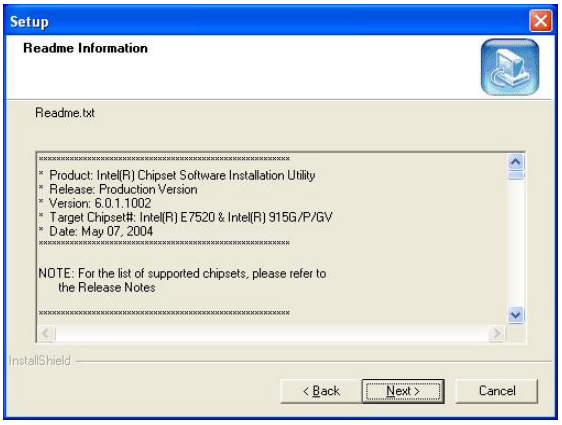


a. Double click the "infinst_enu_6.0.1002" on the "My Computer" window.

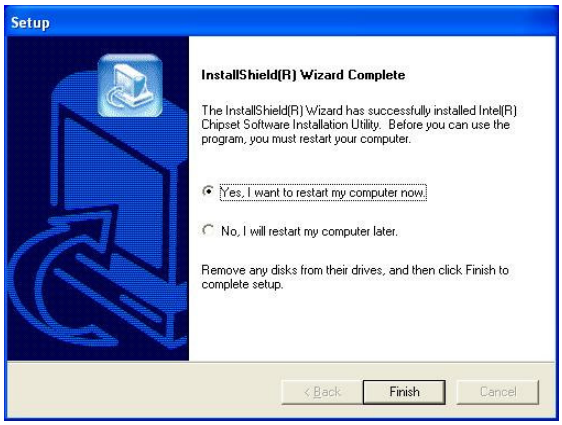
b. Click the "Next" button on the "Welcome" window.


Setup
License Agreement
Please read the following license agreement carefully.
Press the PAGE DOWN key to see the rest of the agreement.
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
Do you accept all the terms of the preceding License Agreement? If you choose No, the setup will close. To install Intel(R) Chipset Software Installation Utility, you must accept this agreement.
InstallShield
< Back
Yes
No

c. Click the “Yes” button on the “License Agreement” window.

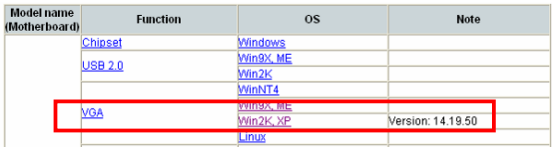

Setup
Readme Information
Readme.txt
* Product: Intel(R) Chipset Software Installation Utility
* Release: Production Version
* Version: 6.0.1.1002
* Target Chipset#: Intel(R) E7520 & Intel(R) 915G/P/GV
* Date: May 07, 2004
NOTE: For the list of supported chipsets, please refer to the Release Notes
InstallShield
< Back
Next >
Cancel

d. Click the “Next” button on the “Readme Information” window.

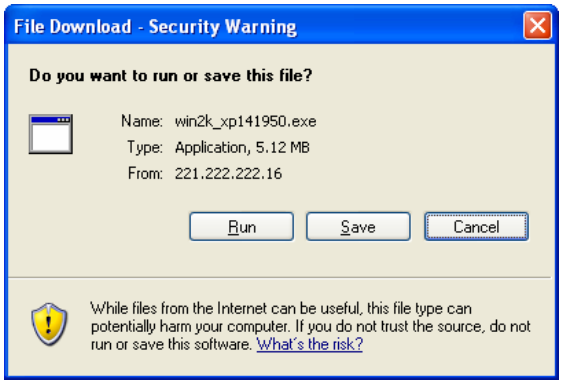

Setup
InstallShield(R) Wizard Complete
The InstallShield(R) Wizard has successfully installed Intel(R) Chipset Software Installation Utility. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel

e. Click the “Finish” button and restart your system.

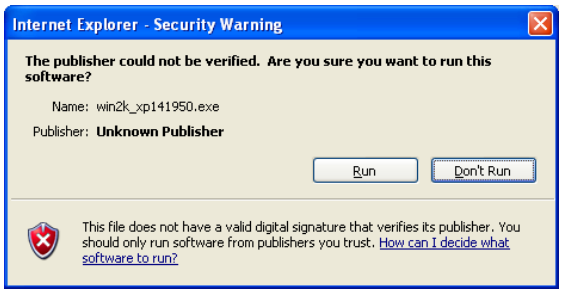
3.3. VGA Driver Installation



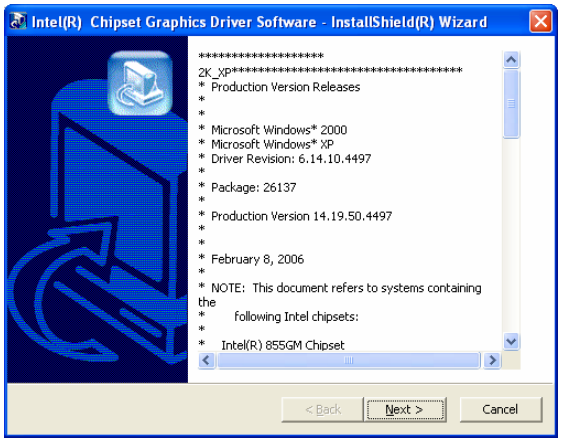
a. Click Section “VGA” > “Win2k,XP” in the driver list.


File Download - Security Warning
Do you want to run or save this file?
Name: win2k_xp141950.exe
Type: Application, 5.12 MB
From: 221.222.222.16
Run
Save
Cancel
While files from the Internet can be useful, this file type can potentially harm your computer. If you do not trust the source, do not run or save this software. What's the risk?

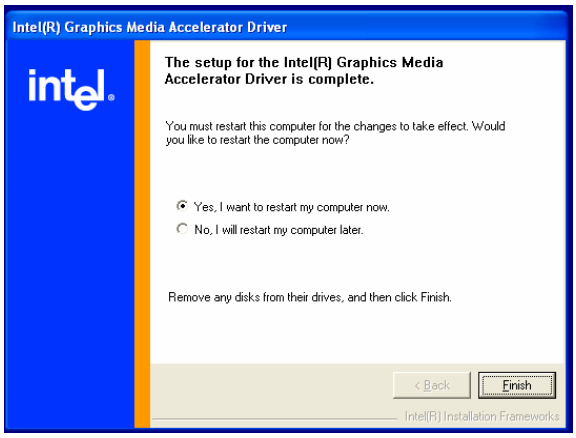
b. Click “Run” button after screen pop up “win2k_xp141950.exe” dialog box.


Internet Explorer - Security Warning
The publisher could not be verified. Are you sure you want to run this software?
Name: win2k_xp141950.exe
Publisher: Unknown Publisher
Run
Don't Run
This file does not have a valid digital signature that verifies its publisher. You should only run software from publishers you trust. How can I decide what software to run?

c. When the “Internet Explorer – Security Warning” dialog box appear, click “Run” button.

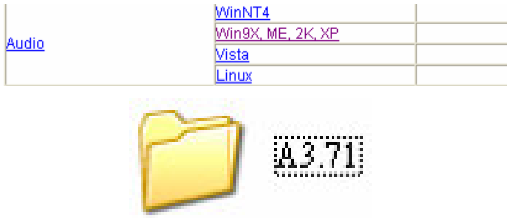

Intel(R) Chipset Graphics Driver Software - InstallShield(R) Wizard
2K_XP
* Production Version Releases
* Microsoft Windows* 2000
* Microsoft Windows* XP
* Driver Revision: 6.14.10.4497
* Package: 26137
* Production Version 14.19.50.4497
* February 8, 2006
* NOTE: This document refers to systems containing the following Intel chipsets:
* Intel(R) 855GM Chipset
< Back
Next >
Cancel

d. Click “Next” Button on the Intel(R) Graphics Media Accelerator Driver window.


Intel(R) Graphics Media Accelerator Driver
The setup for the Intel(R) Graphics Media Accelerator Driver is complete.
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish.
< Back
Finish
Intel(R) Installation Frameworks

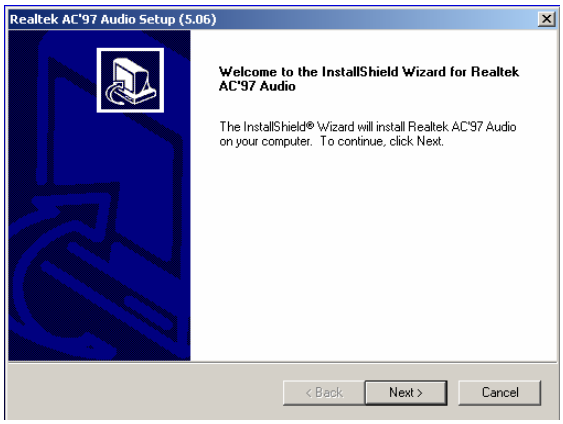
e. Select “Yes, I want to restart my computer now” and click the “Finish” button on the Intel(R) Graphics Media Accelerator Driver window.

3.4. Audio Driver Installation

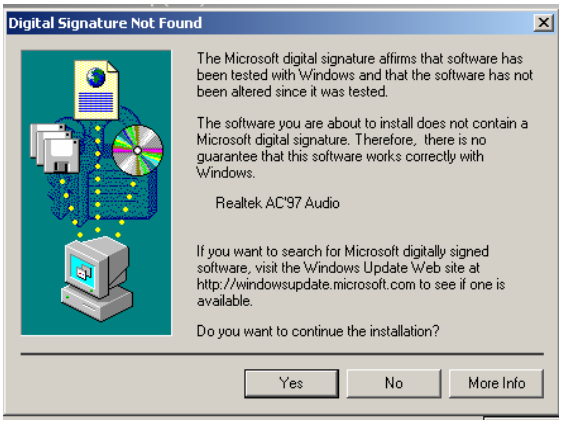


a. Click “A3.71” in the Section “Audio” > “Win9X_ME_2K_XP” the My Computer window.

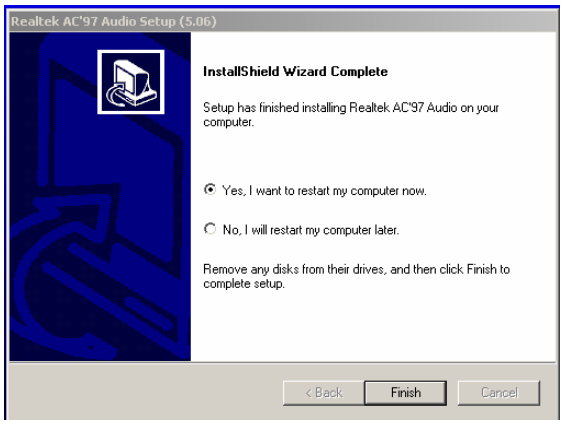
b. Double click “wdm_a371” in the “A3.71” folder..


Realtek AC'97 Audio Setup (5.06)
Welcome to the InstallShield Wizard for Realtek AC'97 Audio
The InstallShield® Wizard will install Realtek AC'97 Audio on your computer. To continue, click Next.
< Back
Next >
Cancel

c. Click “Next” button on the Realtek AC’97 Audio Setup window.

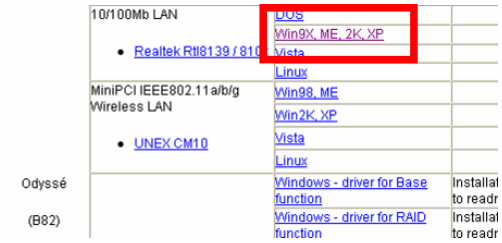

Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
Realtek AC'97 Audio
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.
Do you want to continue the installation?
Yes
No
More Info

d. Click “Yes” button on the Digital Signature Not Found window.

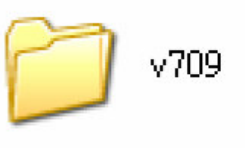

Realtek AC'97 Audio Setup (5.06)
InstallShield Wizard Complete
Setup has finished installing Realtek AC'97 Audio on your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel

e. Click “Finish” button on the Realtek AC’97 Audio Setup window.

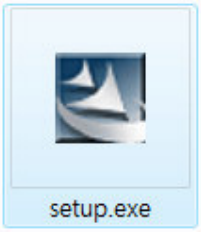
3.5. LAN Driver Installation



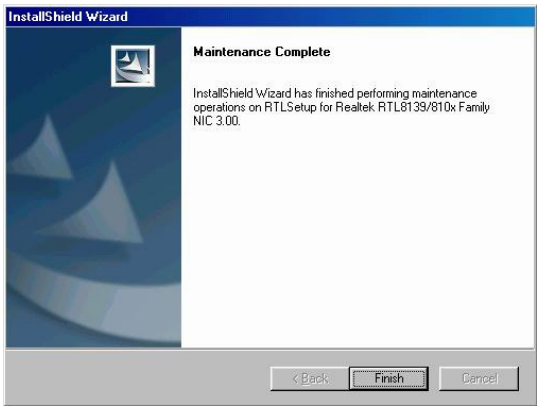
a. In the “Realtek RTL8139/810x” section, click on “Win9X, ME, 2K, XP”



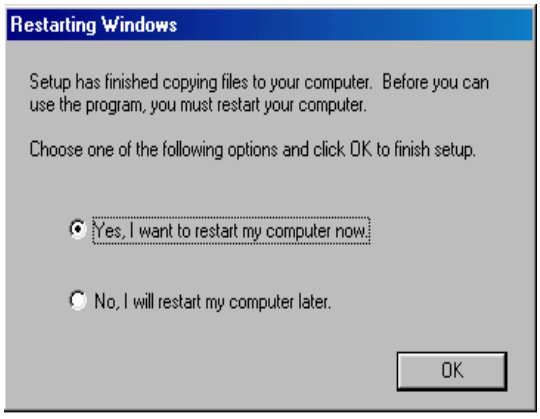
b. Double-click “v709”



c. Double-click “Setup.exe”.

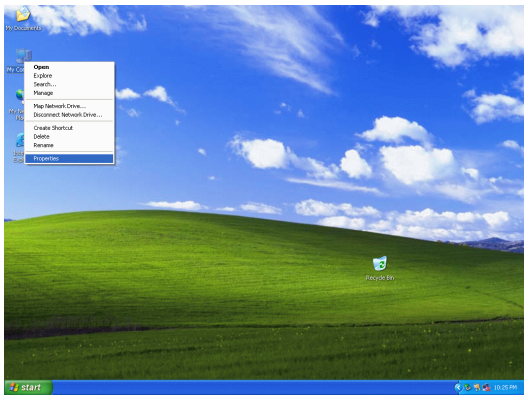


d. Click the “Finish” button on the Maintenance Complete window.

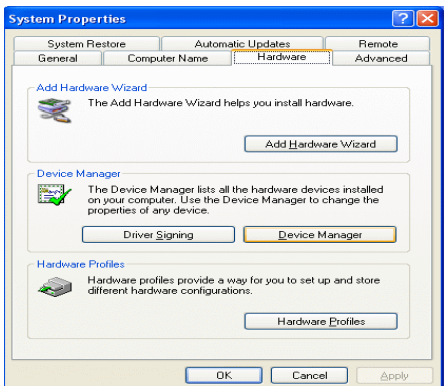

Restarting Windows
Setup has finished copying files to your computer. Before you can use the program, you must restart your computer.
Choose one of the following options and click OK to finish setup.
Yes, I want to restart my computer now.
No, I will restart my computer later.
OK

e. Click the OK button and restart your system.

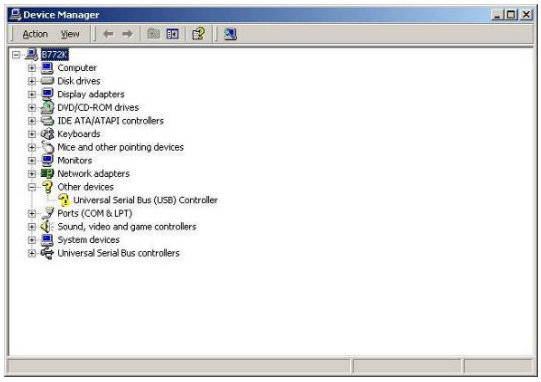
3.6. USB2.0 Driver Installation

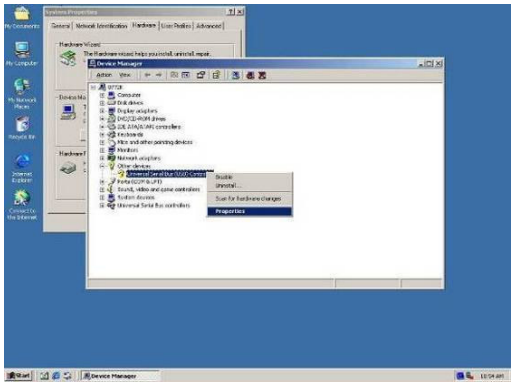


a. Right click the “My Computer” on the windows and select “properties”.



b. Select “Hardware”→”Device Manager” on system properties.





c. Select ”Other Devices” → “Universal Serial Bus (USB) Controller” →”Properties” in the Device Manager.

Universal Serial Bus (USB) Controller Properties
General
Driver
Resources
Universal Serial Bus (USB) Controller
Driver Provider: Unknown
Driver Date: Not available
Driver Version: Not available
Digital Signer: Not digitally signed
No driver files are required or have been loaded for this device. To uninstall the driver files for this device, click Uninstall. To update the driver files for this device, click Update Driver.
Driver Details...
Uninstall
Update Driver...
OK
Cancel

d. Select “Device”→ “Update Driver…”

Upgrade Device Driver Wizard
Welcome to the Upgrade Device Driver Wizard
This wizard helps you upgrade a device driver for a hardware device.
To continue, click Next.
< Back
Next >
Cancel

e. Click the “Next” button on the “Welcome” window.

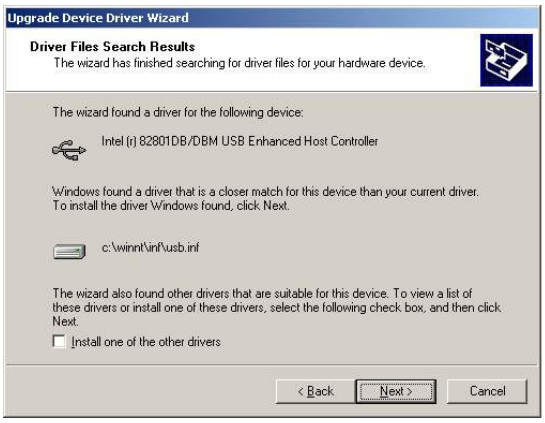
Upgrade Device Driver Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard upgrades drivers for the following hardware device:
Universal Serial Bus (USB) Controller
Upgrading to a newer version of a device driver may add functionality to or improve the performance of this device.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

f. Select “Search for a suitable…”and click the “Next” button on the “Install Hardware Device Drivers” window.

Upgrade Device Driver Wizard
Locate Driver Files
Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
Universal Serial Bus (USB) Controller
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< Back
Next >
Cancel

g. Select “Specify a location” and click the “Next” button on the “Locate Driver Files” window.

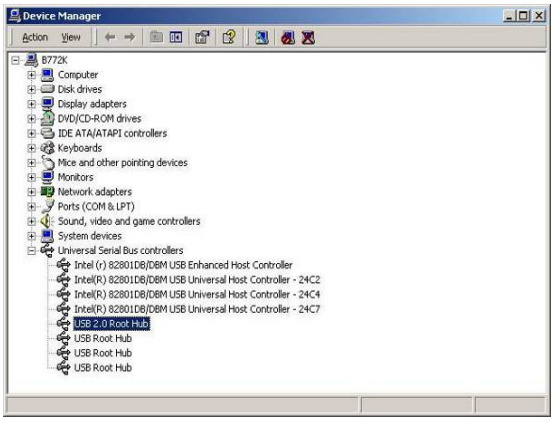
h. Press “Browse” to select driver and then click the “OK” button to next page.


Upgrade Device Driver Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
Intel (r) 82801DB/DBM USB Enhanced Host Controller
Windows found a driver that is a closer match for this device than your current driver.
To install the driver Windows found, click Next.
c:\winnt\inf\usb.inf
The wizard also found other drivers that are suitable for this device. To view a list of these drivers or install one of these drivers, select the following check box, and then click Next.
Install one of the other drivers
< Back
Next >
Cancel

i. Click the “Next” button on “Driver Files Search Results” window.

Upgrade Device Driver Wizard
Completing the Upgrade Device Driver Wizard
Intel (r) 82801DB/DBM USB Enhanced Host Controller
Windows has finished installing the software for this device.
To close this wizard, click Finish.
< Back
Finish
Cancel

j. Click the “Finish” button to complete this process.



k. Finished.

3.7. ELO Touch Screen Driver Installation

a. In the “ELO” section, click on “Windows”.

WinZip Self-Extractor
Welcome to Elo Universal Driver for Windows XP/2000 Installer.
Driver Version 4.6.3 (05-15-2007)
Click OK to continue.
OK

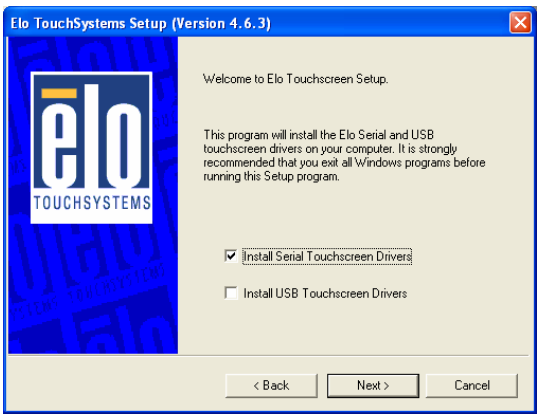
b. Click “OK”.

c. Click “Unzip” to extract the driver to the specified folder.

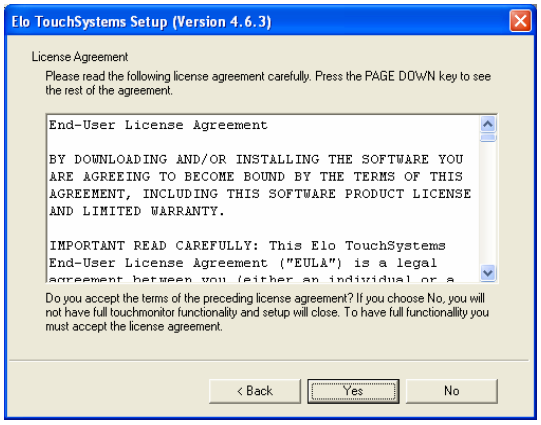
d. Finished unzipping. Click “OK”.

Elo TouchSystems Setup (Version 4.6.3)
Pick the default language for the Elo XP Universal Driver package.
All Elo applications will be displayed in the language selected below.
Default
Next >
Cancel

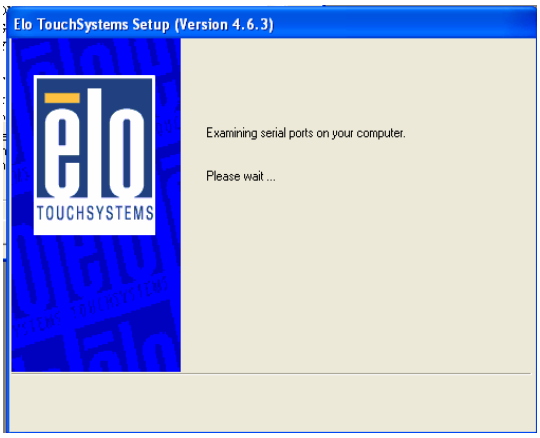
e. Click “Next”.


Elo TouchSystems Setup (Version 4.6.3)
Welcome to Elo Touchscreen Setup.
This program will install the Elo Serial and USB touchscreen drivers on your computer. It is strongly recommended that you exit all Windows programs before running this Setup program.
Install Serial Touchscreen Drivers
Install USB Touchscreen Drivers
< Back
Next >
Cancel

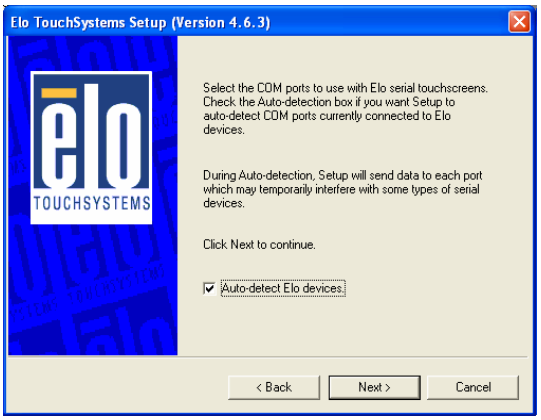
f. Check the box Install Serial Touchscreen Drivers and click “Next”.


Elo TouchSystems Setup (Version 4.6.3)
License Agreement
Please read the following license agreement carefully. Press the PAGE DOWN key to see the rest of the agreement.
End-User License Agreement
BY DOWNLOADING AND/OR INSTALLING THE SOFTWARE YOU ARE AGREEING TO BECOME BOUND BY THE TERMS OF THIS AGREEMENT, INCLUDING THIS SOFTWARE PRODUCT LICENSE AND LIMITED WARRANTY.
IMPORTANT READ CAREFULLY: This Elo TouchSystems End-User License Agreement ("EULA") is a legal
Do you accept the terms of the preceding license agreement? If you choose No, you will not have full touchmonitor functionality and setup will close. To have full functionality you must accept the license agreement.
< Back
Yes
No

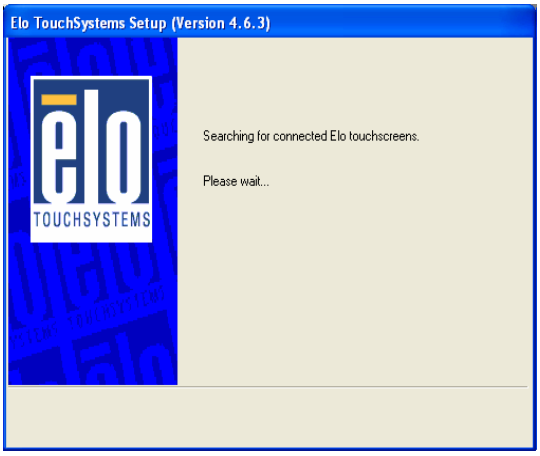
g. Click “Yes” to accept the End User License Agreement



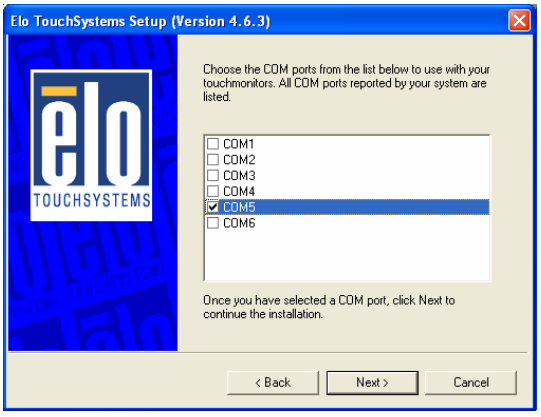
h. Examining serial ports on the computer…


Elo TouchSystems Setup (Version 4.6.3)
TOUCHSYSTEMS
Select the COM ports to use with Elo serial touchscreens. Check the Auto-detection box if you want Setup to auto-detect COM ports currently connected to Elo devices.
During Auto-detection, Setup will send data to each port which may temporarily interfere with some types of serial devices.
Click Next to continue.
Auto-detect Elo devices.
< Back
Next >
Cancel

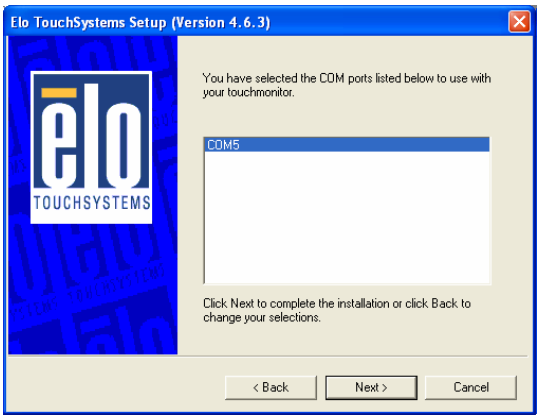
i. Check the box Auto-detect Elo devices and click “Next”.



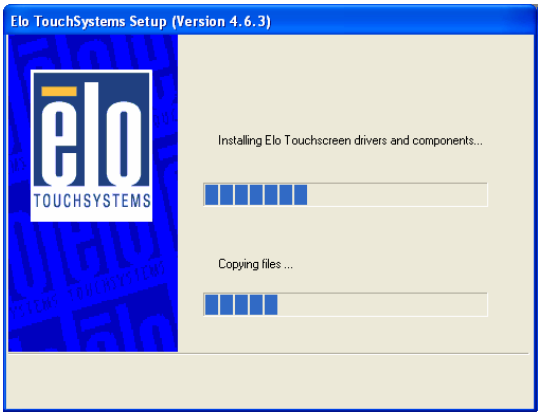
j. The computer is searching for a connected to Elo Touchscreen.


Elo TouchSystems Setup (Version 4.6.3)
TOUCHSYSTEMS
Choose the COM ports from the list below to use with your touchmonitors. All COM ports reported by your system are listed.
COM1
COM2
COM3
COM4
COM5
COM6
Once you have selected a COM port, click Next to continue the installation.
< Back
Next >
Cancel

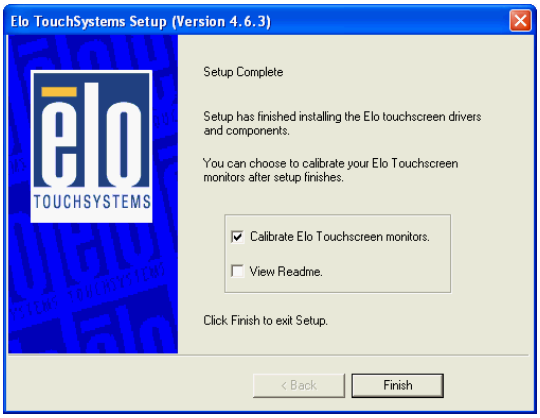
k. Touchscreen found on COM5. Click “Next”.


Elo TouchSystems Setup (Version 4.6.3)
TOUCHSYSTEMS
You have selected the COM ports listed below to use with your touchmonitor.
COM5
Click Next to complete the installation or click Back to change your selections.
< Back
Next >
Cancel

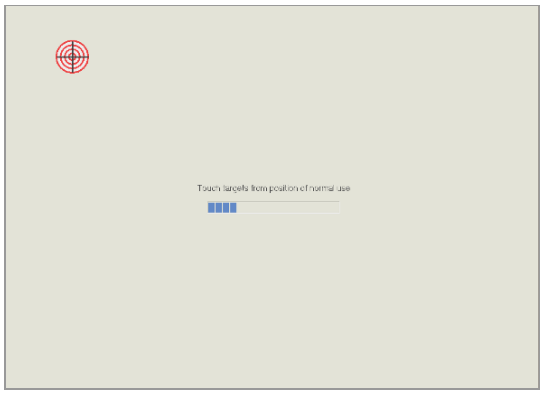
l. Click “Next” to complete the driver installation.



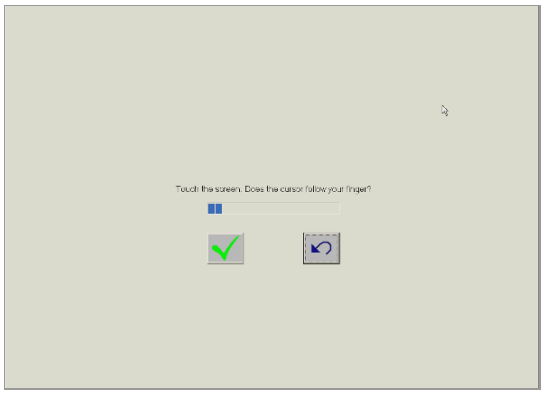
m. Driver is installing…


Elo TouchSystems Setup (Version 4.6.3)
Setup Complete
Setup has finished installing the Elo touchscreen drivers and components.
You can choose to calibrate your Elo Touchscreen monitors after setup finishes.
Calibrate Elo Touchscreen monitors.
View Readme.
Click Finish to exit Setup.
< Back
Finish

n. The driver installation and setup are now complete. Click “Finish” to start the touchscreen calibration.



o. Follow the instructions on the screen to calibrate the Touchscreen.

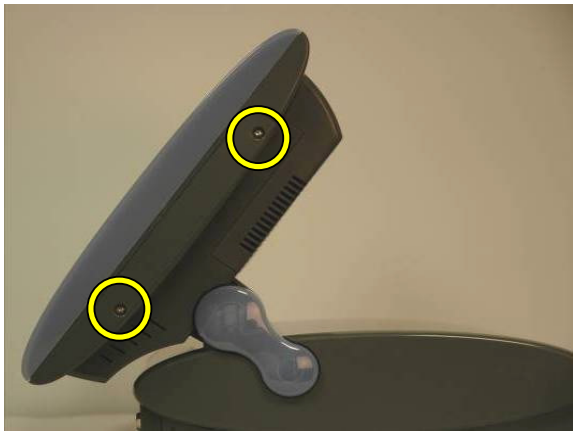


p. Verify that the touchscreen is working correctly by moving your finger on the screen. The mouse cursor should follow your finger. Finally, touch the green checkmark to save the calibration settings and exit the program.

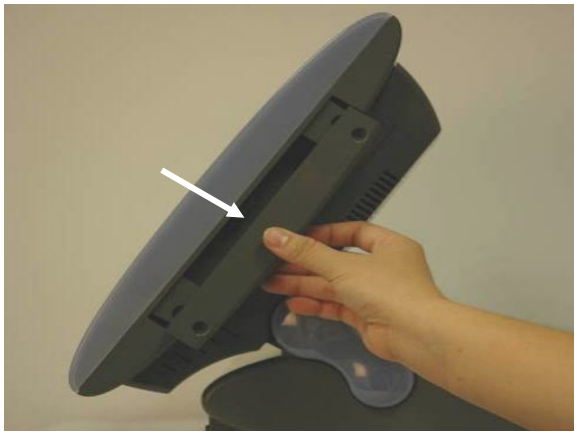
4. Peripherals Installation

The MSR and VFD customer display are tested and can be supplied at your request. The MSR and VFD customer display are packed separately for transportation and can be installed by the user.

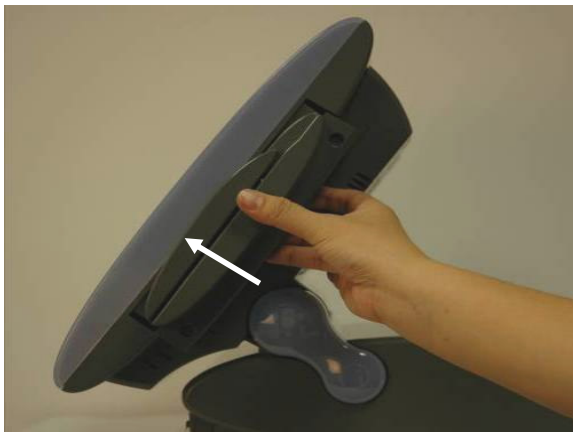
4.1. MSR



a. Remove the screws (2) of the MSR dummy door.



b. Slide the MSR dummy door out as shown in the picture.



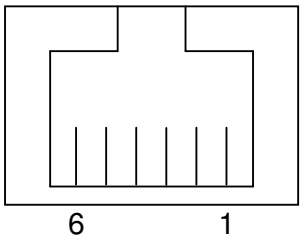
c. Slide the MSR into position.

d. Fasten it to the display housing by tightening the screws (2).

4.2. Cash Drawer Installation

You can install a cash drawer through the cash drawer port. Please verify the pin assignment before installation.

4.2.1. Cash Drawer Pin Assignment



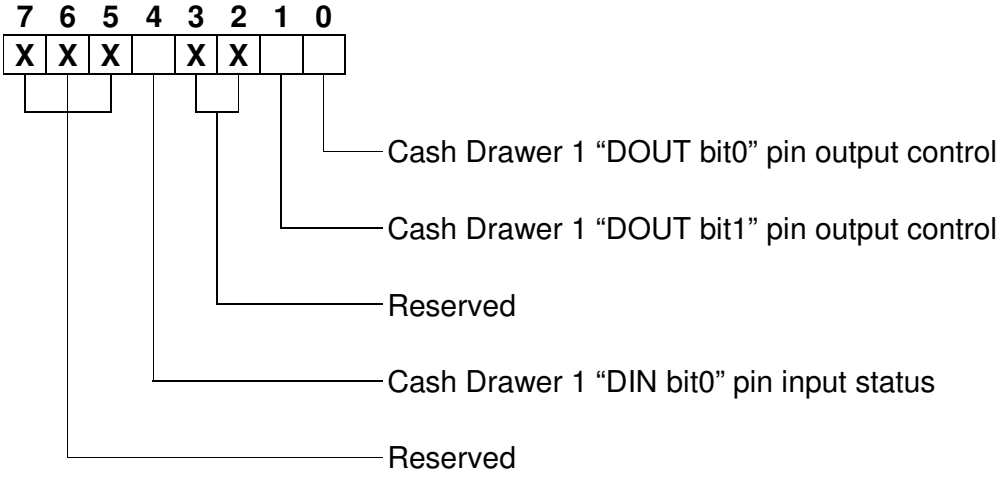
Pin	Signal
1	GND
2	DOUT bit0
3	DIN bit0
4	12V / 24V
5	DOUT bit1
6	GND

4.2.2. Cash Drawer Controller Register

The Cash Drawer Controller use one I/O addresses to control the Cash Drawer.
The Cash Drawer Control Register and the Cash Drawer Status Register.

Register Location: 4B8h
Attribute: Read / Write
Size: 8bit

BIT	BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
Attribute	Reserved	Reserved	Reserved	Read	Reserved	Reserved	Write	Write


7 6 5 4 3 2 1 0
X X X X X
Cash Drawer 1 “DOUT bit0” pin output control
Cash Drawer 1 “DOUT bit1” pin output control
Reserved
Cash Drawer 1 “DIN bit0” pin input status
Reserved

Bit 7: Reserved.
Bit 6: Reserved.
Bit 5: Reserved.
Bit 4: Cash Drawer “DIN bit0” pin input status.
= 1: the Cash Drawer closed or no Cash Drawer.
= 0: the Cash Drawer opened.
Bit 3: Reserved.
Bit 2: Reserved.
Bit 1: Cash Drawer “DOUT bit1” pin output control.
= 1: Opening the Cash Drawer
= 0: Allow closing the Cash Drawer
Bit 0: Cash Drawer “DOUT bit0” pin output control.
= 1: Opening the Cash Drawer
= 0: Allow closing the Cash Drawer

Note: Please follow the Cash Drawer control signal design to control the Cash Drawer.

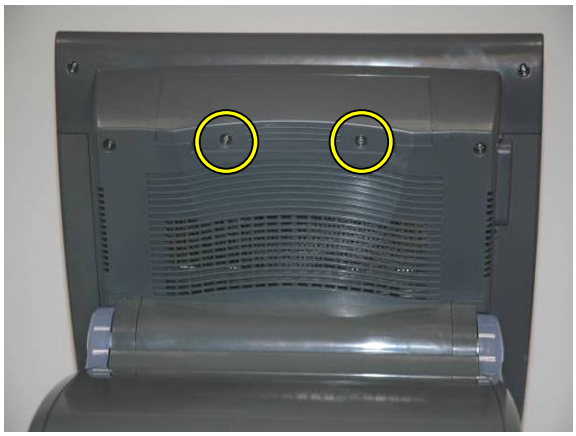
4.2.3 Cash Drawer Control Command Example

Use Debug.EXE program under **DOS** or **Windows98 DOS mode**

Command	Cash Drawer
O 4B8 01	**Opening**
O 4B8 00	**Allow to closing**
➢ **Set the I/O address 4B8h bit0 =1 for opening the Cash Drawer by “DOUT bit0” pin control.** ➢ **Set the I/O address 4B8h bit0 = 0 to allow closing Cash Drawer.**	

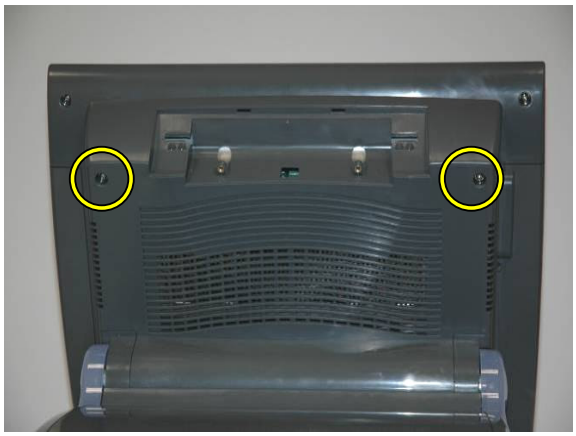
Command	Cash Drawer
I 4B8	**Check status**
➢ **The I/O address 4B8h bit4 =1 means the Cash Drawer is closed or no Cash Drawer.** ➢ **The I/O address 4B8h bit4 =0 means the Cash Drawer is open.**	

4.3. VFD Customer Display

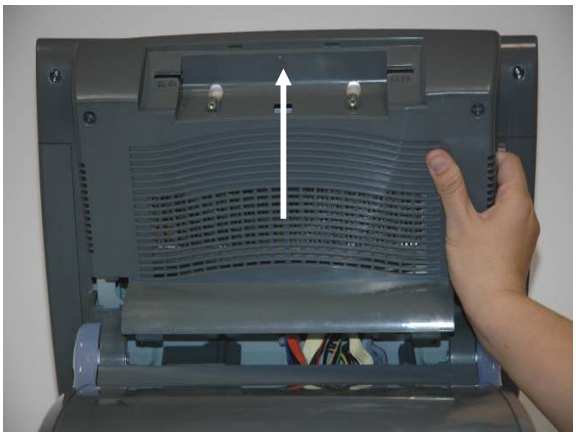


a. Remove the screws (2) of the VFD dummy door.

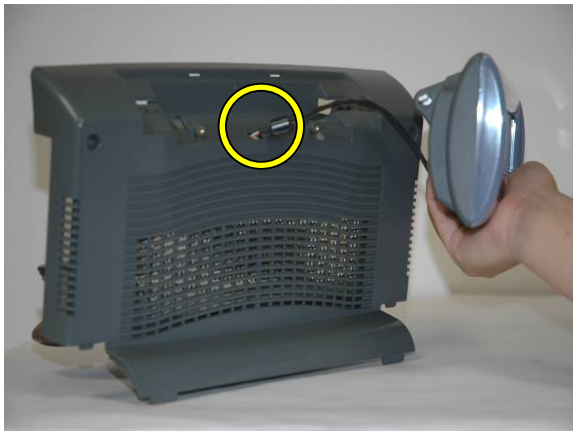
b. Slide the VFD dummy door out.



c. Remove the screws (2) of the CPU RAM door.

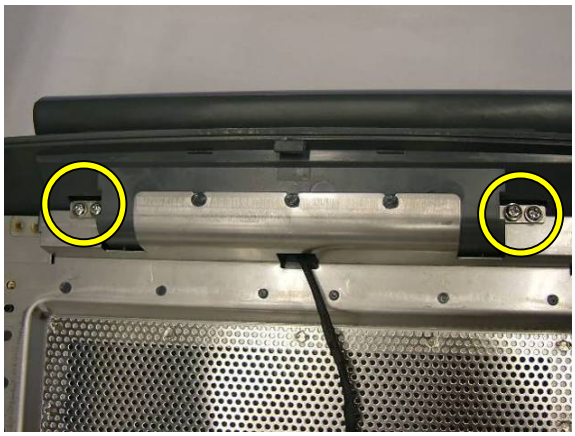


d. Slide the CPU RAM door out.

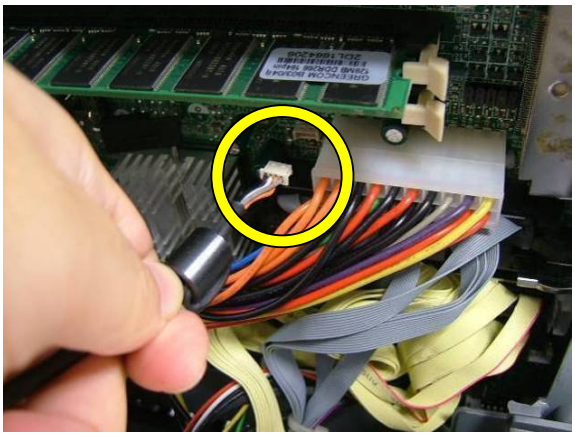


e. Pass the VFD cable through the hole as shown in the picture.

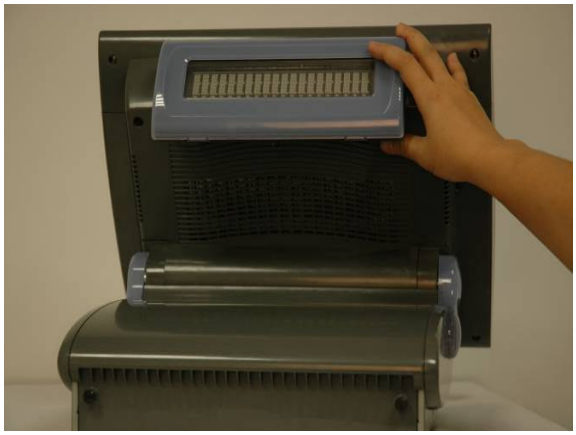
f. Click both sides of the VFD assembly into the position as shown in the picture.



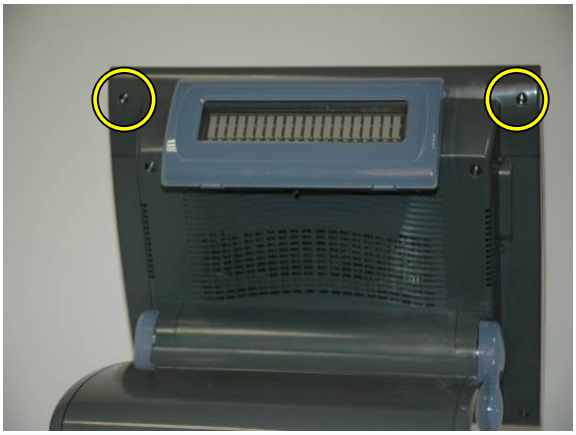
g. Turn the assembly over and fix the MSR to the CPU RAM door with the four screws (4) supplied with the MSR.



h. Connect the VFD cable to the connector as shown.



i. Slide the CPU ram door into position.

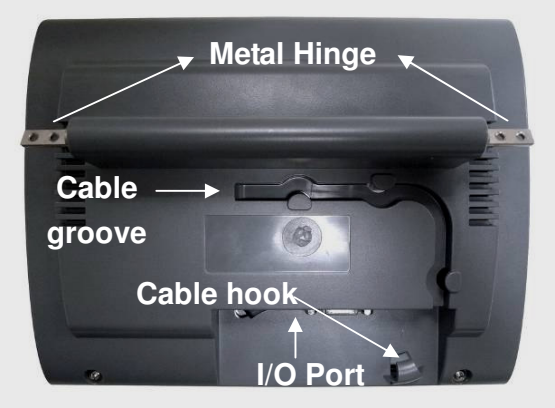


j. Fasten the CPU ram door to the LCD housing by tightening the screws (2).

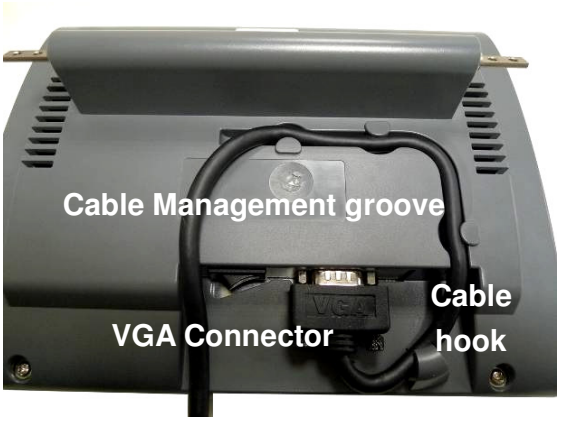
4.4. Second Display Installation

To Install the Second Display, first remove the back cover of the system (see chapter 4.3 steps a, b, c, and d). Remove the base cover and the hard disk/auxiliary fan tray (see chapter 5.0, steps a, b, c, and d.)

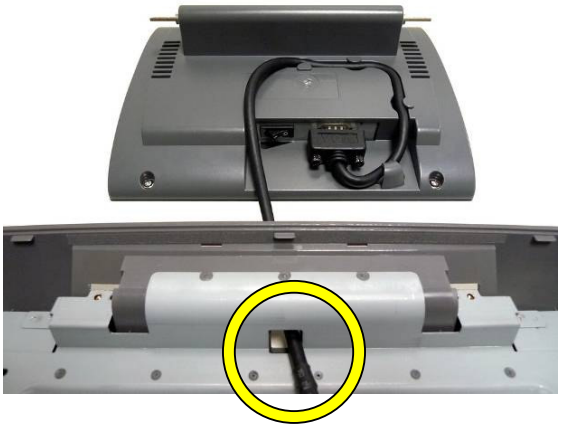
a. 2nd Display, VGA Cable, ferrite core and power extender cable



b. Rear View of 2nd Display and the groove for cable management.

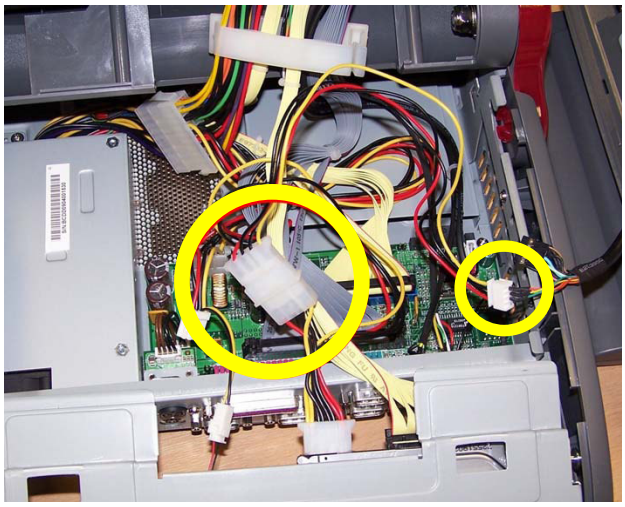


c. Press the VGA cable firmly along the groove and behind the cable hook. Connect the VGA cable (1) as shown in the picture.

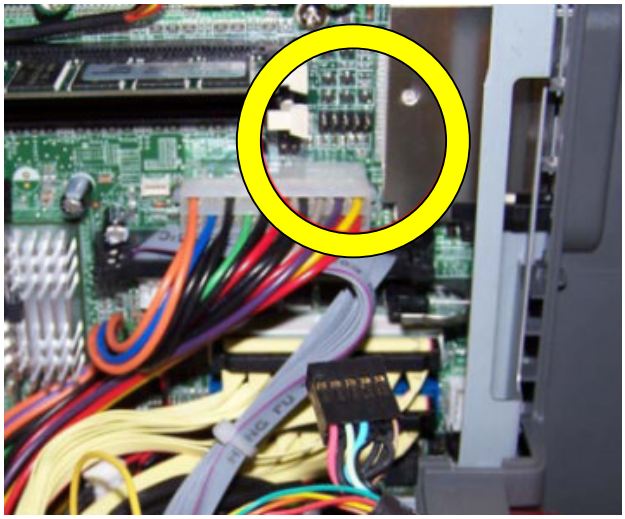


d. Route the cable through the hole of the back cover.

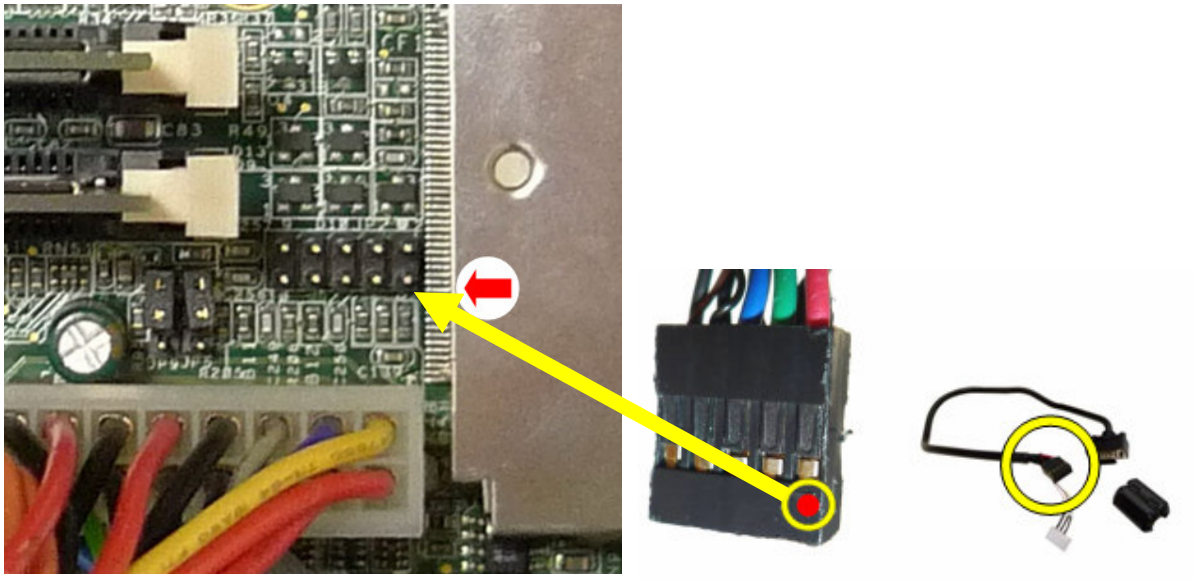
e. Install the ferrite core around the VGA cable and close it.



f. Connect the supplied power extension cable to the white connector of the VGA cable at one end, and to the spare power connector which branches off the system's hard drive power cable at the other end.
Route the power cable through the white cable clip.

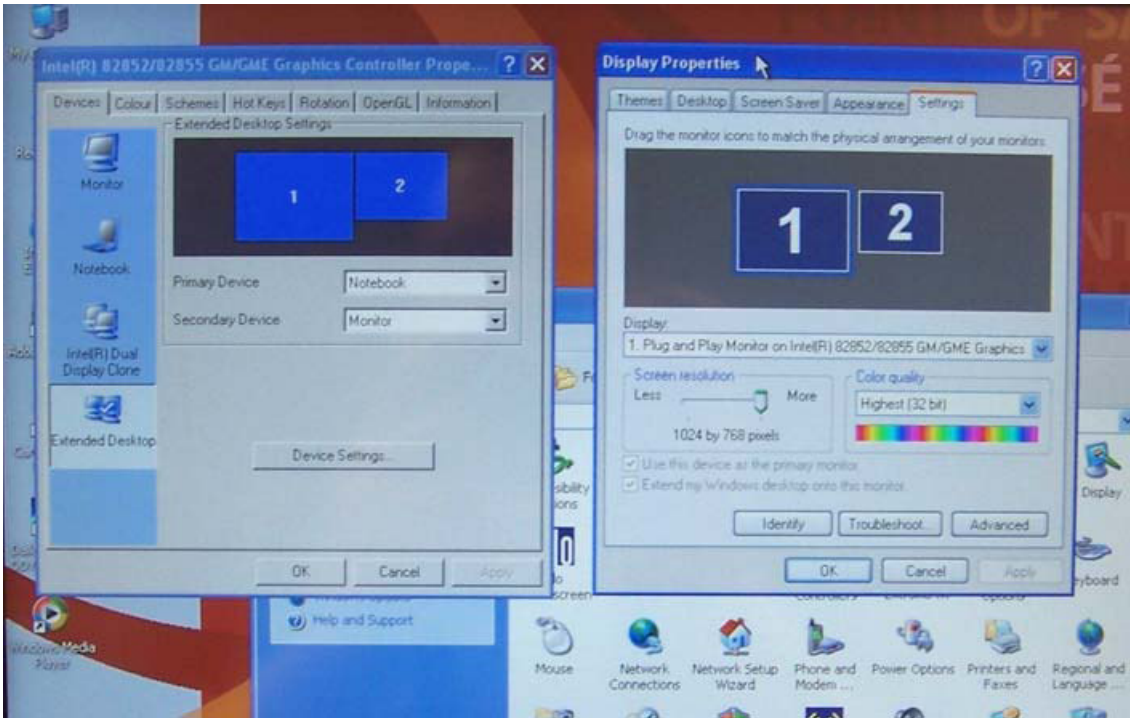


g. The picture shows the location of the motherboard VGA connector. See below for the correct way to connect the cable.



NOTE:

Connect the black 10 pin connector to the motherboard VGA connector, taking care that the red dot on the connector is in the lower right corner, as indicated by the red arrow on the CF card slot metal shielding.



The rear LCD assembly will be available in Windows as a secondary display & the desktop can then be either mirrored or extended onto it. This setting can be controlled via either the Windows display settings or the Intel graphics properties, both of which can be accessed via Control Panel.

4.5. Compact Flash Card

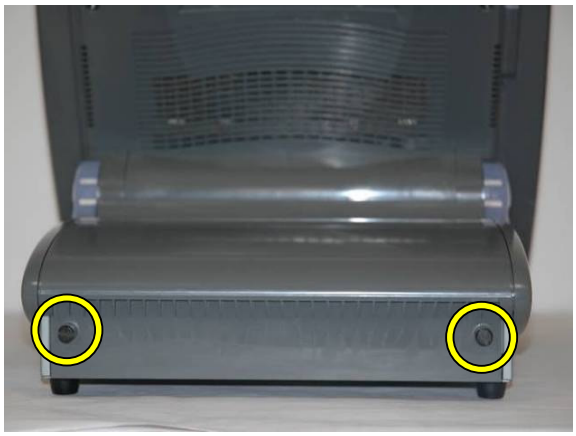
a. Open the compact flash card cover.

b. Insert the compact flash card with the label facing up into the compact flash card slot.

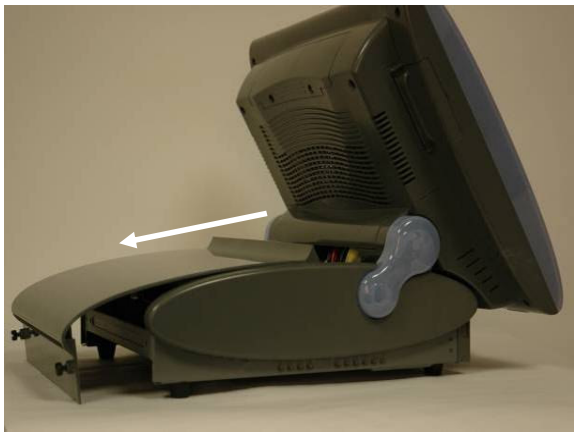
Note: Power must be off when installing the compact flash card.

5. System Disassembly

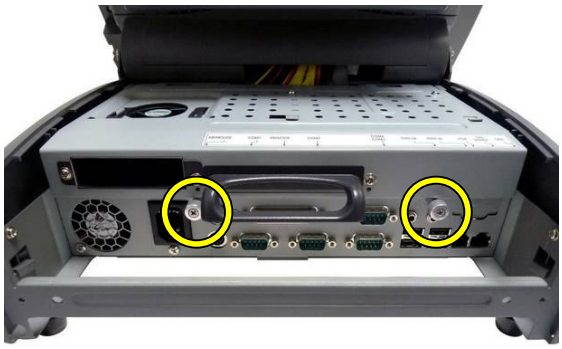
5.1. Replace HDD



a. Loosen the screws (2) that secure the base rear cover.



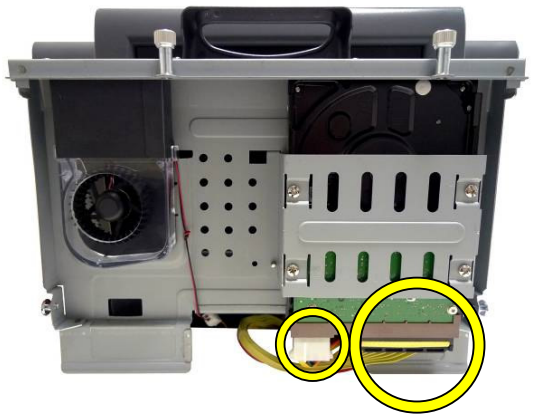
b. Slide the base rear cover toward the back of the terminal.



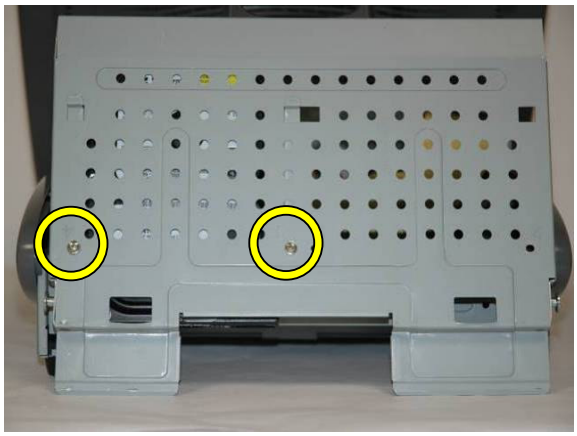
c. Unscrew the thumb screws (2).

d. Pull the base cover bracket towards you by the handle, and lift it up.

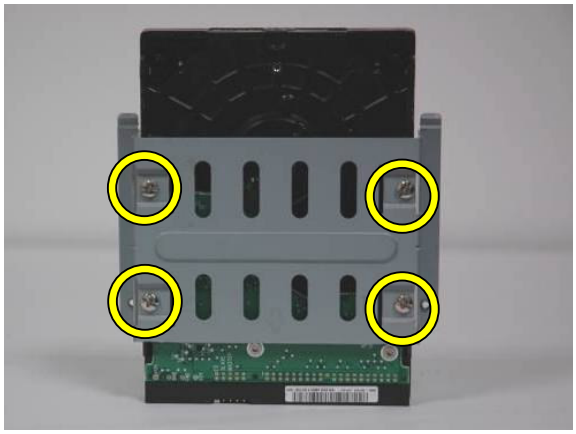
5.1.1. PATA HDD Replacement



a. Disconnect the FAN, IDE and Power cables to disengage the HDD Metal Chassis from the Terminal.

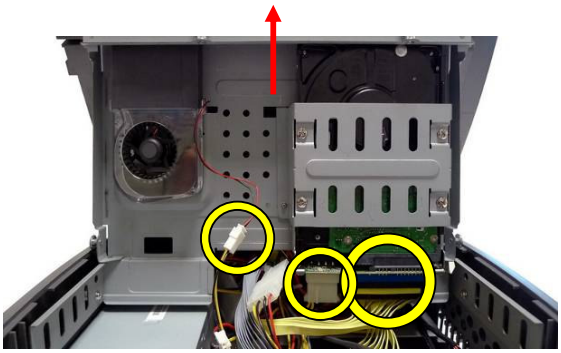


b. Turn the HDD Metal Chassis back up and remove the screws (2) to separate the HDD Metal Bracket from the HDD Metal Chassis.

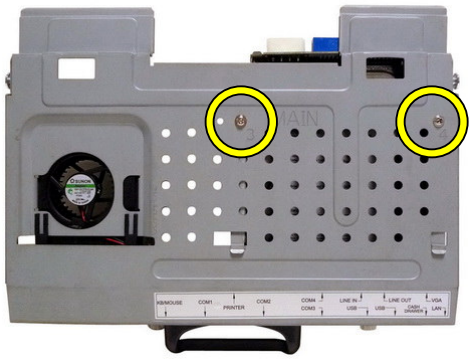


c. Remove the screws (4) to detach the Metal Bracket from the PATA HDD.

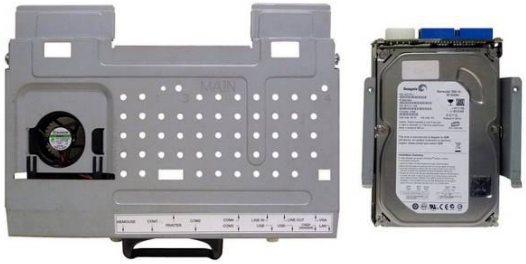
5.1.2. SATA HDD Replacement



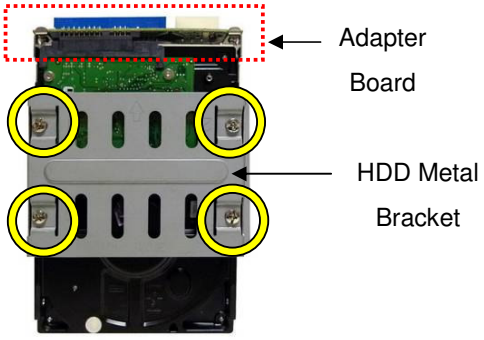
a. Disconnect the FAN, Power and IDE Cable (3) and disengage the HDD Metal Chassis from the terminal.



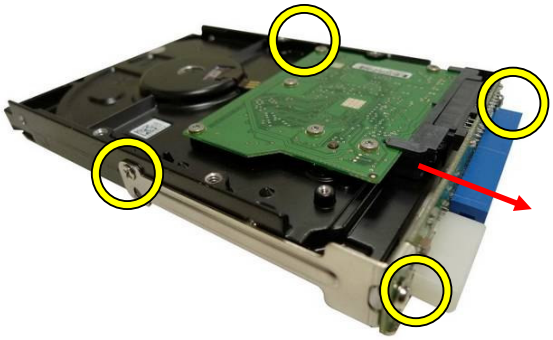
b. Turn over the HDD Metal Chassis and remove the screws (2).



c. Disengage the HDD metal bracket from the HDD Metal Chassis



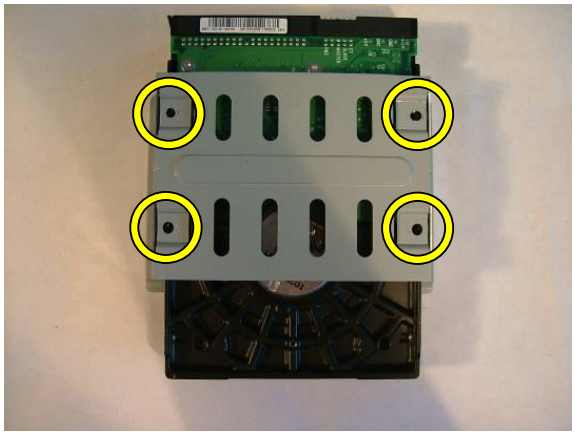
d. Turn over the HDD Metal Bracket and remove the screws (4) to separate the bracket from the SATA HDD.



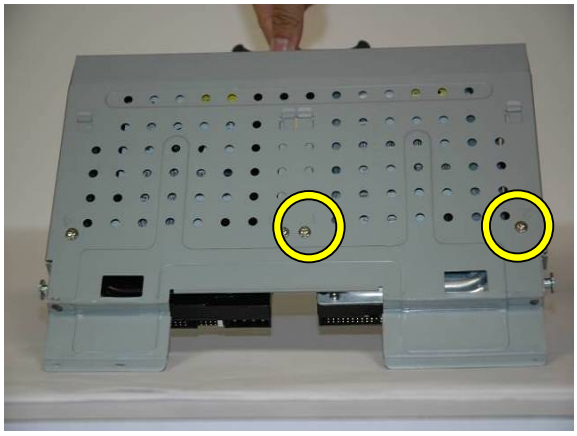
e. Remove the screws (4) from the HDD Metal Bracket and disconnect the SATA Adapter Board from the HDD.

5.2. Install second HDD

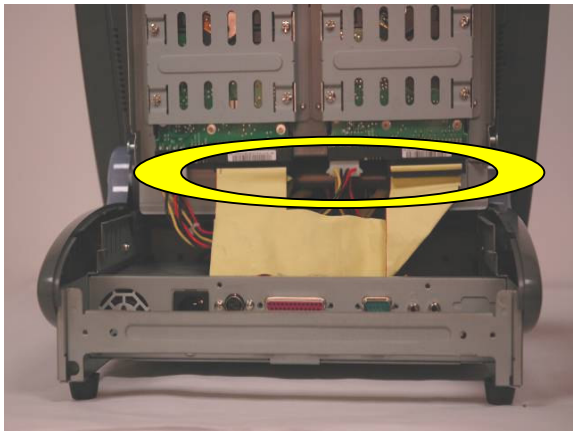
Follow the instructions in chapter 5.1, items a. to e. to open the system remove the base cover bracket.



a. Tighten the screws (4) to assemble the HDD and the HDD bracket.



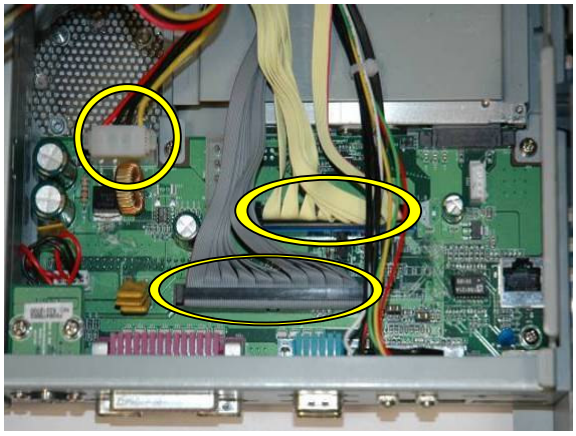
b. Install the second HDD in its location and secure it with the screws (2).



c. Connect the IDE cables (2) and the power cables (2) of both HDD.

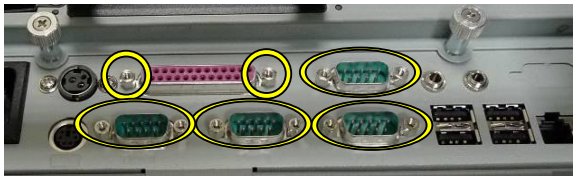
5.3. Replace I/O Board

The I/O board is located at the base chassis. It is necessary to remove the base cover bracket as described in chapter 5.1.

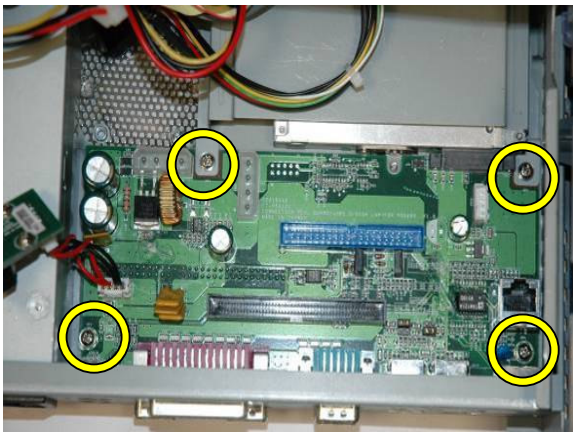


a. Disconnect the cables (3) including power cable, IDE cable and 100 pin cable.

b. Remove the screws (2) of the 24V DC port and remove the screws (2) of the line-in and line-out.



c. Remove the 3/16 Hex Screws (10) that secure the board.



d. Remove the screws (4) to replace the I/O board.

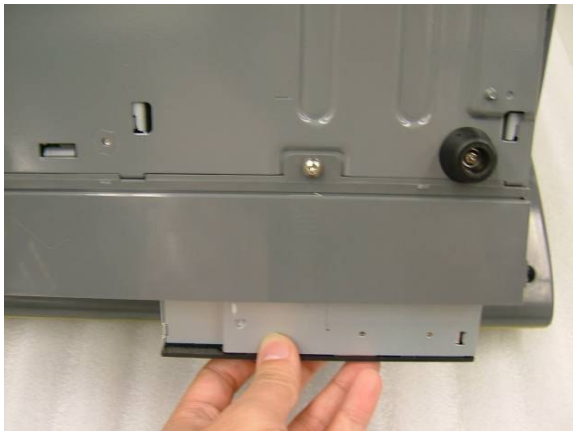
5.4. Replace CD-ROM

The CD-ROM is located in the base chassis.

a. Remove the back cover screw (1) at the bottom of terminal.

b. Open the base door.

c. Use a screwdriver to remove the CD-ROM.

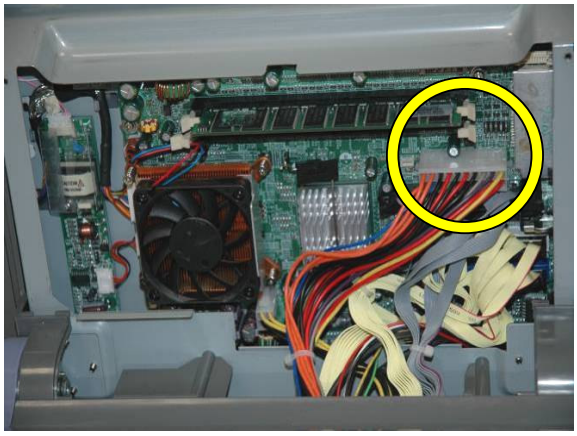


d. Remove the CD-ROM and replace it.

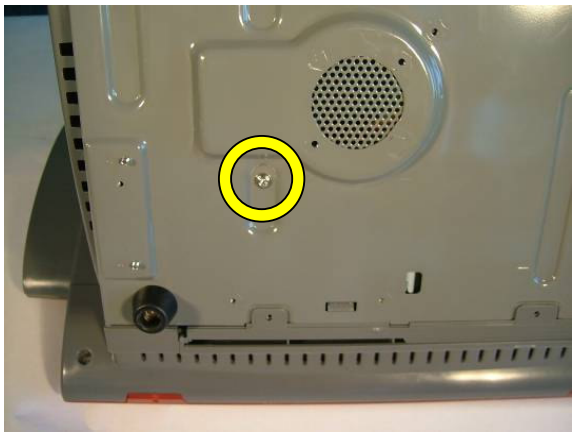
5.5. Replace Power Supply

The power supply is located in the base chassis. It is necessary to remove the base cover bracket first as described in chapter 5.1.

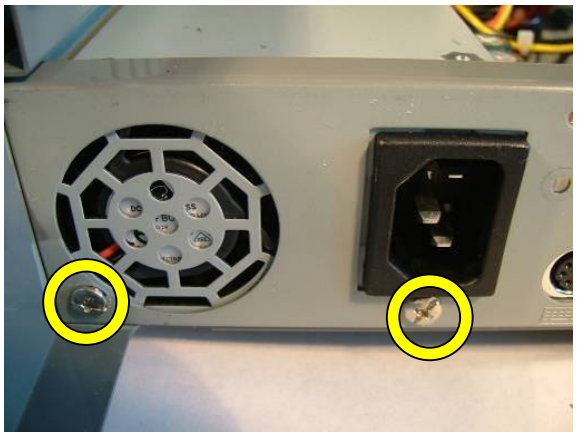
a. Remove the screws (2) to take the CPU ram door out.



b. Disconnect the 20pin cable (1).



c. Remove the back cover screw (1) at the bottom of terminal.

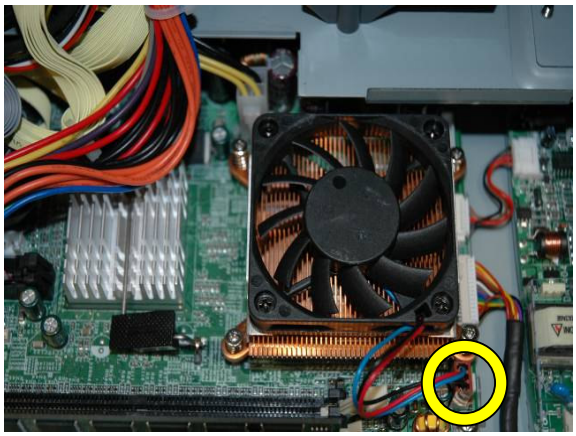


d. Remove the screws (2) to replace the power supply.

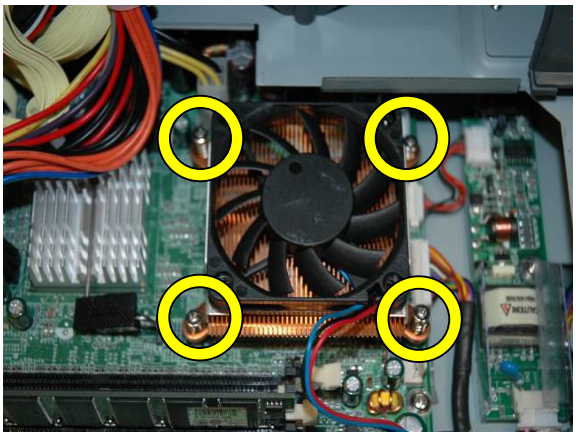
5.6. Replace Memory & CPU

a. Remove the screws (2) to take the CPU ram door out.

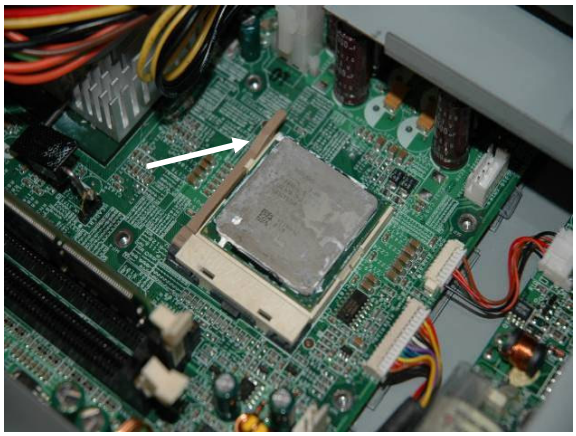
b. The memory slots are located on the mainboard. To remove the memory module, use your finger to push the DIMM slot ejector clips into the down position. Remove the memory module from the slot.



c. Disconnect the fan cable.



d. Remove the screws (4) to remove the heatsink and the fan.



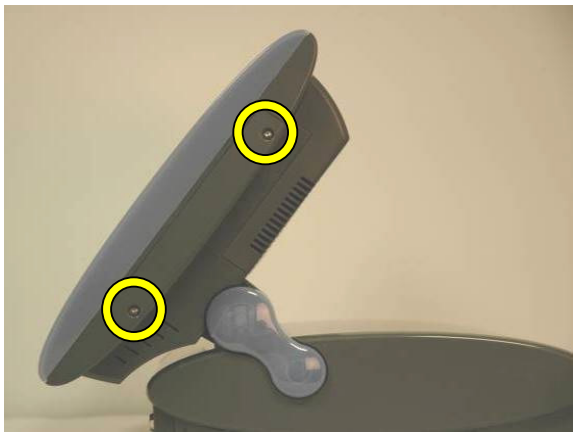
e. To remove the CPU, push the CPU socket lever down and away from the socket, and lift it up.

5.7. Remove Motherboard

Follow the instructions in chapter 5.6.first and remove the CPU.

a. Disconnect the following cables (8): 20pin cable, 100pin cable, IDE1 cable, IDE2 cable, USB3&4 cable, MIC&Line-in cable, speaker cable and CPU power cable. (Refer to Chapter 7).

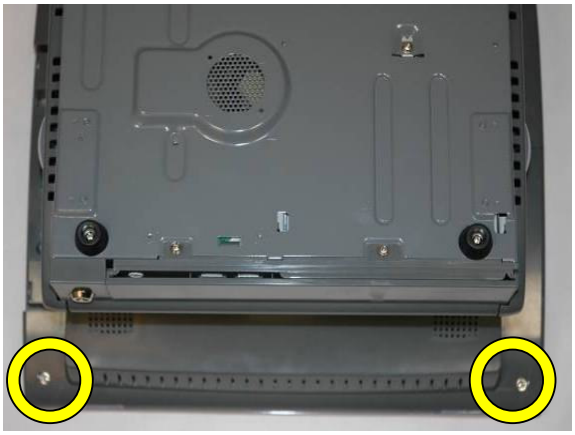
b. Open the compact flash card cover. Remove the screw (1).



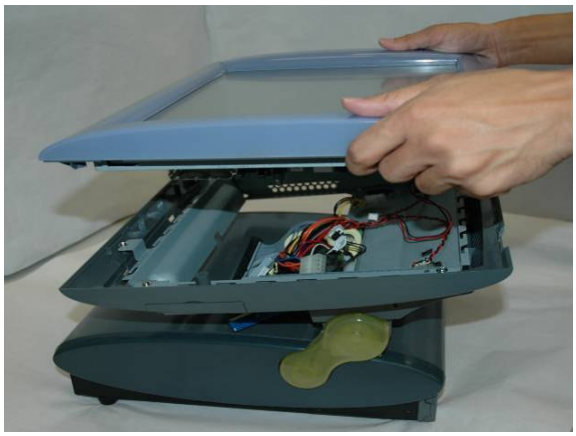
c. Remove the screws (2) of the MSR.

d. Remove the screw (1).

e. Remove the screws (2).

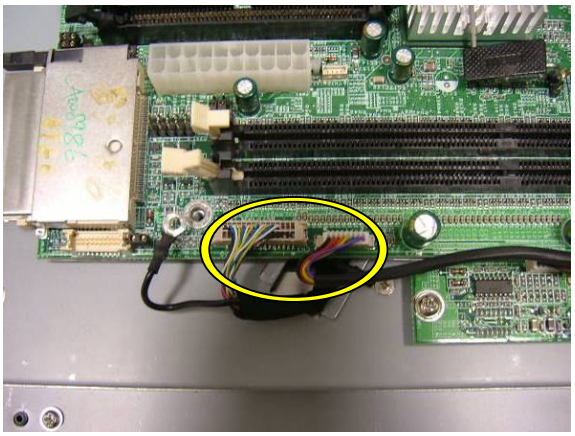


f. Remove the screws (2).

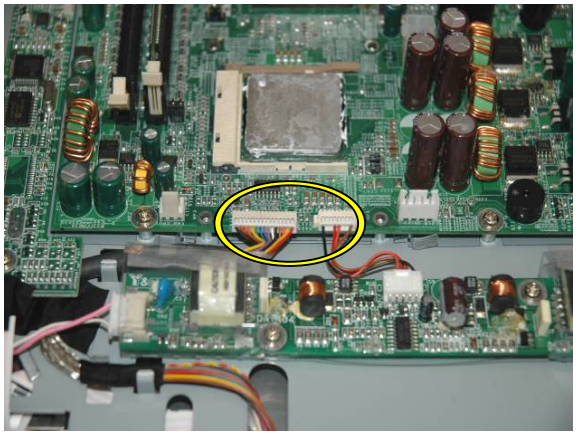


g. Use your hands to carefully press in the two sides to separate the LCD chassis from the base (including LCD cover).

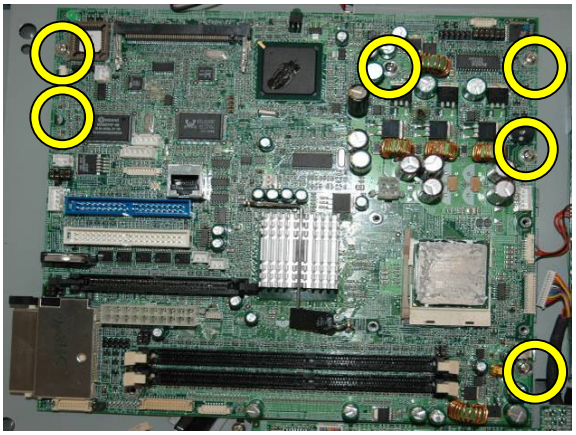
h. Remove the screw (1) of the touch board.



i. Disconnect the cables (2) of the touch board.



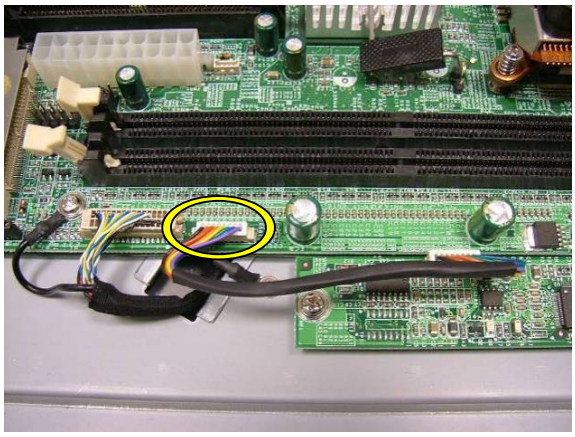
j. Disconnect the cables (2) of the inverter board.



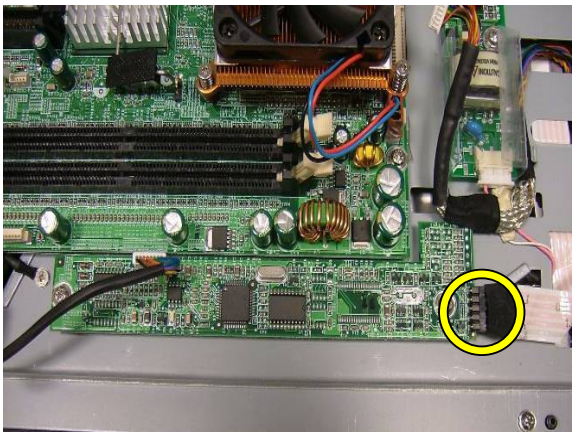
k. Remove the screws (6) to remove the motherboard.

5.8. Remove the Touch Board

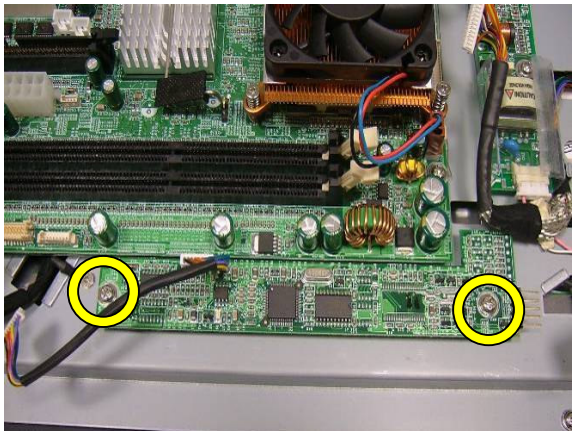
Follow the instructions in chapter 5.7. items a. to g. to remove the base and LCD cover.



a. Disconnect the cable (1) of the touch board.



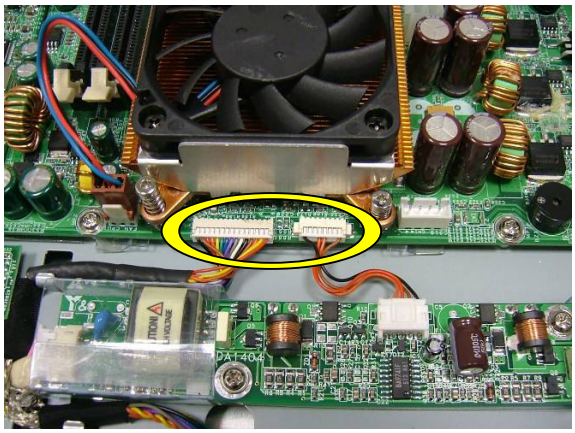
b. Disconnect the 5-wire resistive cable (1).



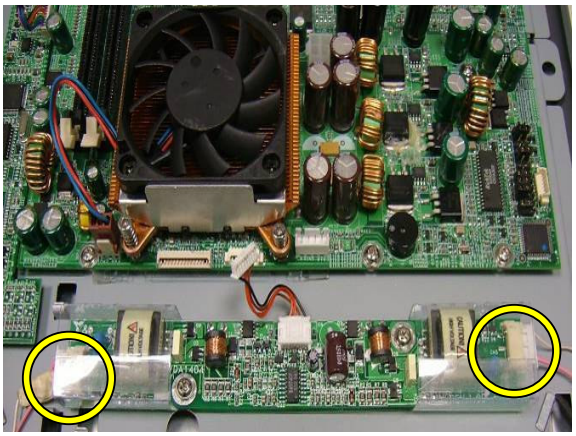
c. Remove the screws (2) to remove the touch board.

5.9. Remove the Inverter Board

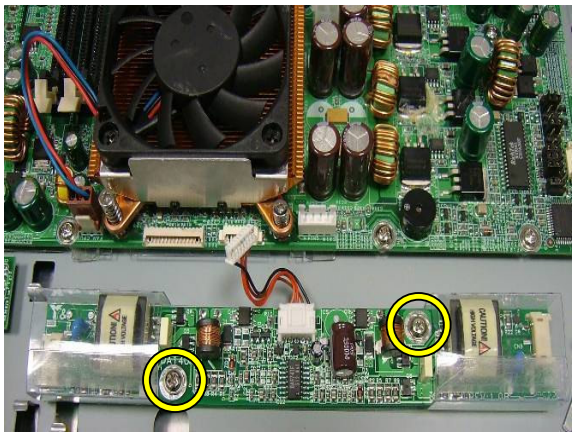
Follow the instructions in chapter 5.7. items a. to g. to remove the base and LCD cover.



a. Disconnect the cables (2).



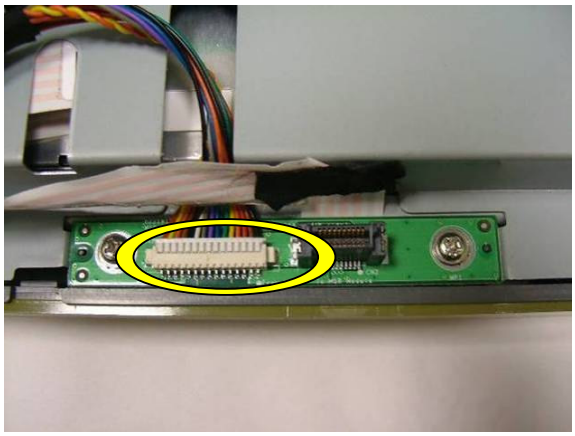
b. Disconnect the backlight cables (2).



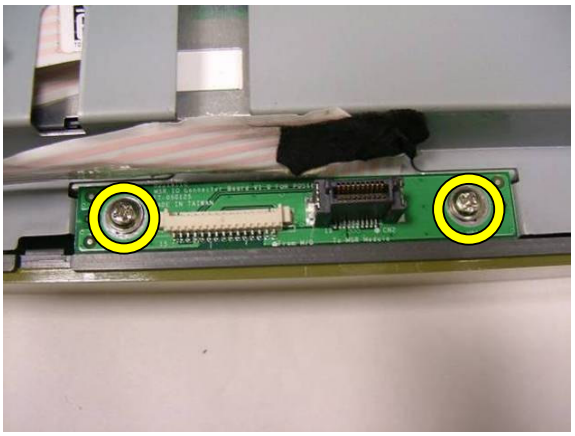
c. Remove the screws (2) to remove the inverter board.

5.10. Remove the Touch Panel

Follow the instructions in chapter 5.7. items a. to g. to remove the base and LCD cover.



a. Disconnect the cable (1) of the MSR connect board.



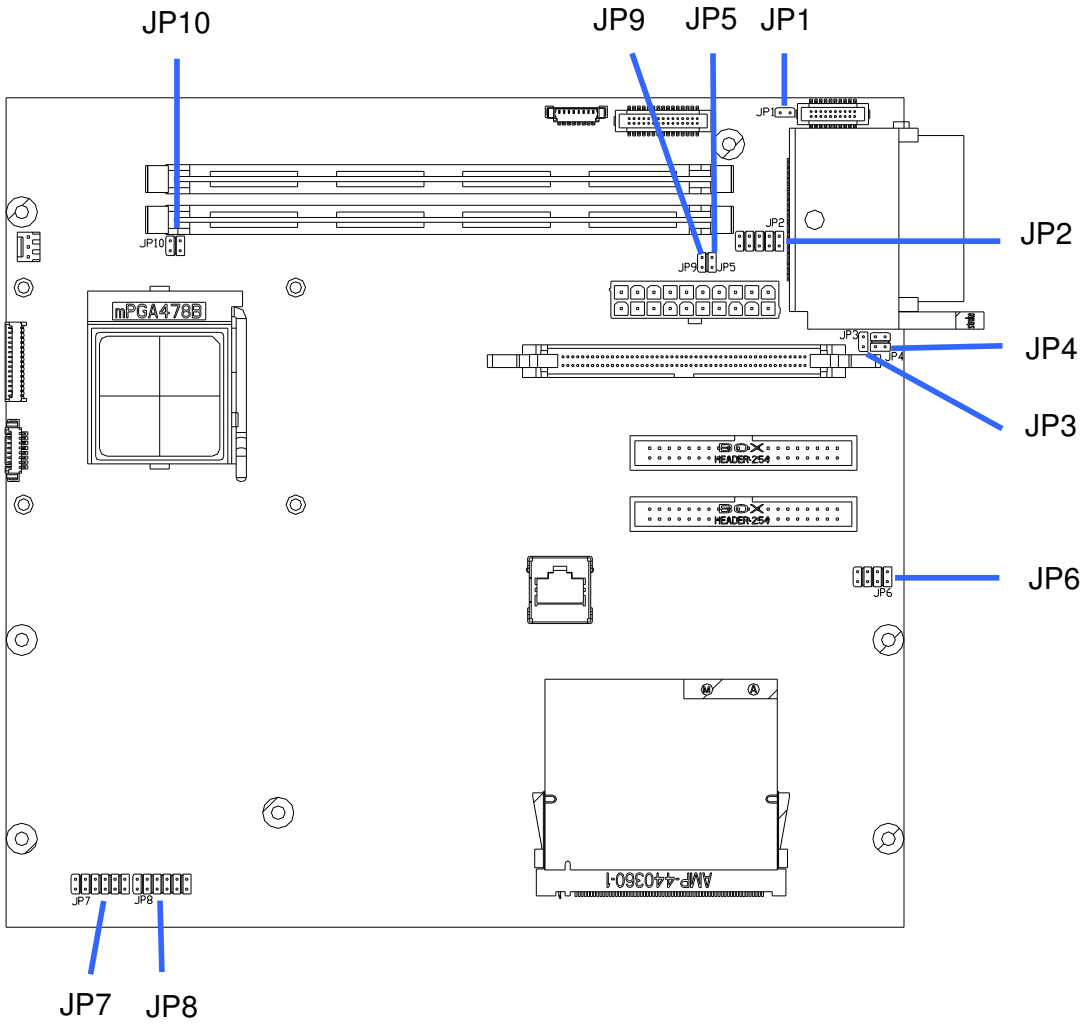
b. Remove the screws (2).

c. Remove the screws (5) that secure the LCD chassis. Then, remove the LCD chassis.

d. Remove the screws (12) to remove the touch panel.

6. Jumper Settings

6.1. Main Board Layout



6.2. Jumper Settings for Main Board

1. Compact Flash Master/Slave Setting ◎ Factory Default Setting

Function	JP1 (SHORT)
Master	◎1-2
Slave	NC

2. ACPI Mode Setting

Function	JP3 (SHORT)
Disable	◎1-2
Enable	NC

3. I-Button Setting

Function	JP4 (SHORT)
Use I-Button	NC
No I-Button	◎1-2 3-4

4. CMOS Operation Mode Setting

Function	JP5 (SHORT)
CMOS Normal	◎NC
CMOS Reset	1-2

To clear the CMOS:

1) Remove AC power from the unit.
2) Open the cabinet.
3) Change the JP5 jumper setting from N/C to 1-2.
4) Wait 1 minute.
5) Change the JP5 jumper setting back to N/C.
6) Close the cabinet.
7) Apply AC power and continue.

5. Power Mode Setting

Function	JP9 (SHORT)
ATX	◎NC
AT	1-2

6. CPU Frequency Setting

Function	JP10 (SHORT)
FSB 400	1-2,3-4
FSB 533	3-4

7. CPU Voltage Setting

CPU Type	JP7 (SHORT)	JP8 (SHORT)
P4-M (1.3V) PERF Mode	NC	3-4, 1-2 (NC) 9-10, 5-6 (NC) 7-8 (NC) 11-12 (NC)
◎P4, Celeron	1-2, 3-4 5-6, 7-8 9-10, 11-12	NC

8. LCD ID Setting

Panel Number	Resolution	LVDS		JP6				LCD type
		Bits	Channel	1-2	3-4	5-6	7-8	
0	640 x 480	18	Single	SHORT	SHORT	SHORT	SHORT	
1	800 x 600	18	Single	SHORT	SHORT	SHORT	OPEN	
2	1024 x 768	18	Single	SHORT	SHORT	OPEN	SHORT	
3	1280 x 1024	24	Dual	SHORT	SHORT	OPEN	OPEN	
4	1024 x 768	24	Single	SHORT	OPEN	SHORT	SHORT	All 15" LCD models except SVA150XG10TB
5	800 x 600	24	Single	SHORT	OPEN	SHORT	OPEN	
8	1024 X 768	24	Single	OPEN	SHORT	SHORT	SHORT	SVA150XG10TB

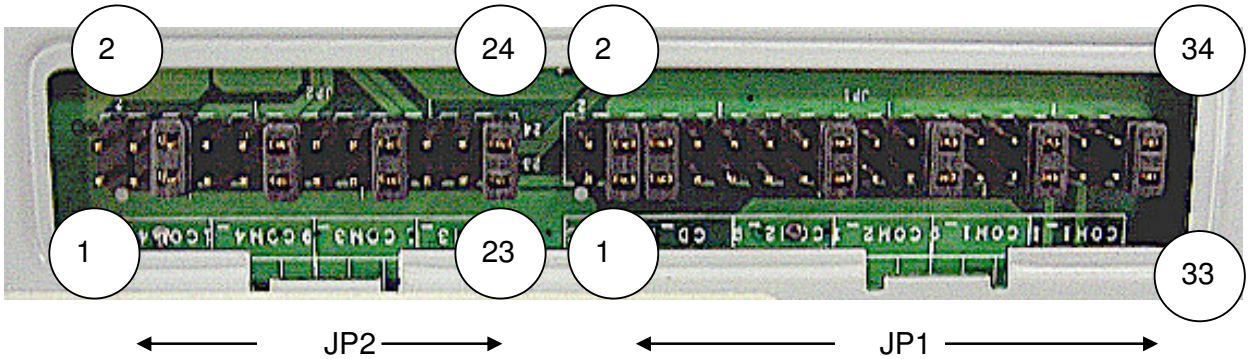
Note:

OPEN

SHORT

6.3. Jumper Setting for I/O Board

JP1 and JP2 control how the COM port connectors are configured. These jumpers are located on the bottom of the I/O Connector Board and can be accessed without terminal disassembly. Tilt the terminal and Replace the Jumper Cover Plate (1 screw) on the bottom of the terminal to gain access to the jumpers.



1. COM1/COM2/Cash Drawer DC Power Jumper Setting: JP1 (SHORT)

Cash Drawer					COM2						COM1					
1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-30	31-32	33-34
NC	+24V ◎	+24V ◎	+12V	+12V	+12V	+5V	RI ◎	+12V	+5V	DCD ◎	+12V	+5V	RI ◎	+12V	+5V	DCD ◎
					PIN9			PIN1			PIN9			PIN1		

◎Factory Default Setting

2. COM3/COM4 DC Power Jumper Setting: JP2 (SHORT)

COM4						COM3					
1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24
+12V	+5V	RI ◎	+12V	+5V	DCD ◎	+12V	+5V	RI ◎	+12V	+5V	DCD ◎
PIN9			PIN1			PIN9			PIN1		

◎Factory Default Setting

3. USB DC Power Jumper Setting: JP3/JP4 (SHORT) – **NOT USED, do not change**

JP3 (SHORT)		JP4 (SHORT)	
1-2	3-4	1-2	3-4
+24V	◎+12V	◎+24V	+12V

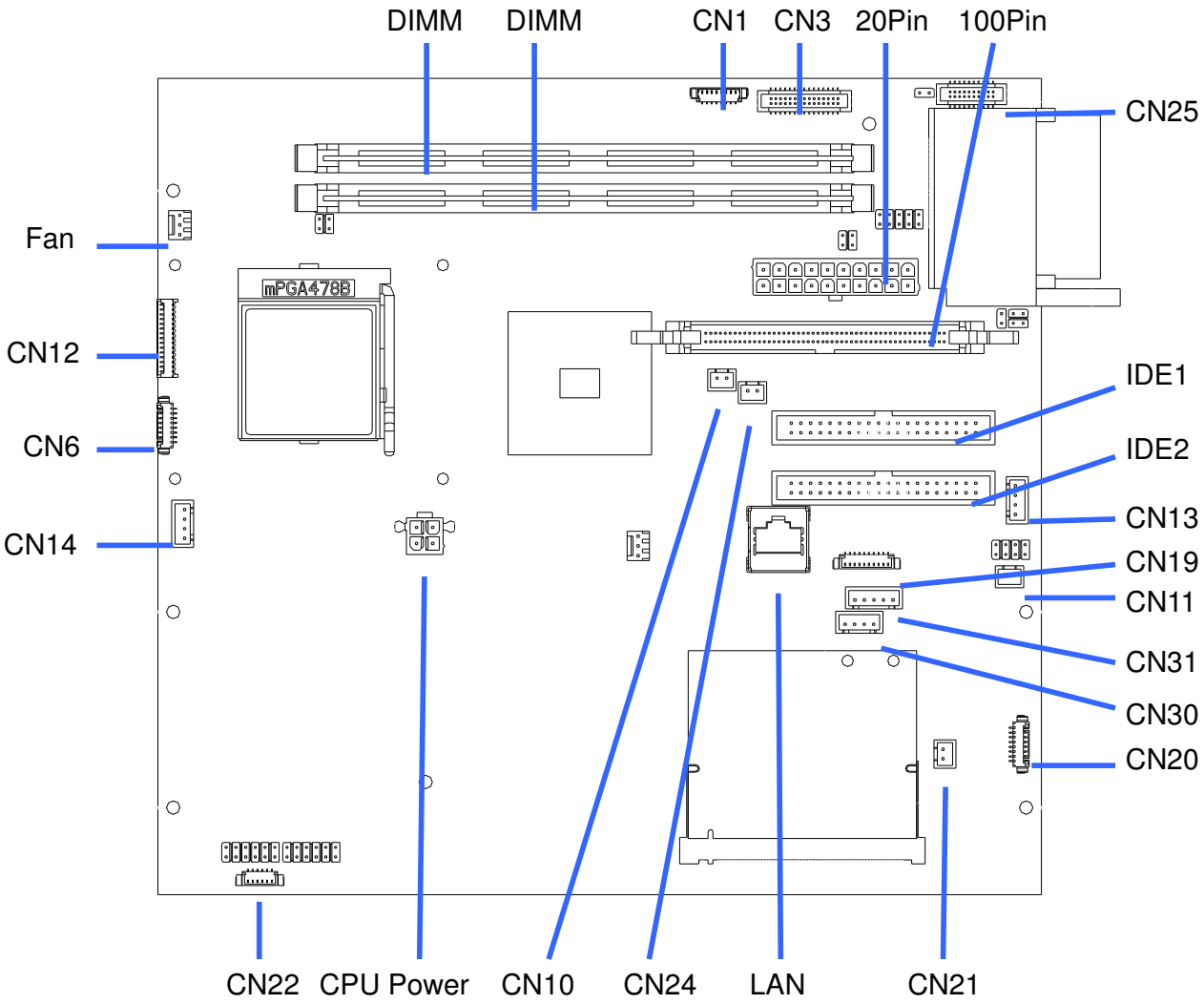
◎Factory Default Setting

Note:

OPEN

SHORT

6.4. Connectors Location



6.5. Connectors Definition

Connector	Function
CN1	COM5 for Touch
CN3	Single Channel LCD Interface
CN6	Inverter Power
CN10	IDE ACT LED
CN11	Power Switch
CN12	15” POS Card Reader CONN
CN13	USB6
CN14	USB5
CN19	USB3, USB4
CN20	I-Button
CN21	Hardware Reset
CN22	XC9536 Modify Port
CN24	Power LED CONN
CN25	Dual Channel LCD Interface
CN30	Speaker
CN31	MIC & Line-in

7. Default BIOS Settings

7.1. BIOS Setup Utility

The BIOS setup defines how the system is configured. You need to run this program the first time you configure this product. You may need to run it again if you change the configuration.

You need to connect a PC keyboard to the keyboard connector to run the BIOS setup utility.

7.2. Starting the BIOS Setup

1. Turn on or reboot this product.
2. Press the DEL key immediately after the product is turned on, or press the DEL key when the following message is displayed during POST (the Power on Self-Test).

   Press DEL to enter SETUP.

3. The main menu of the BIOS setup is displayed.
4. If the supervisor password is set, you must enter it here.

7.3. When a Problem Occurs

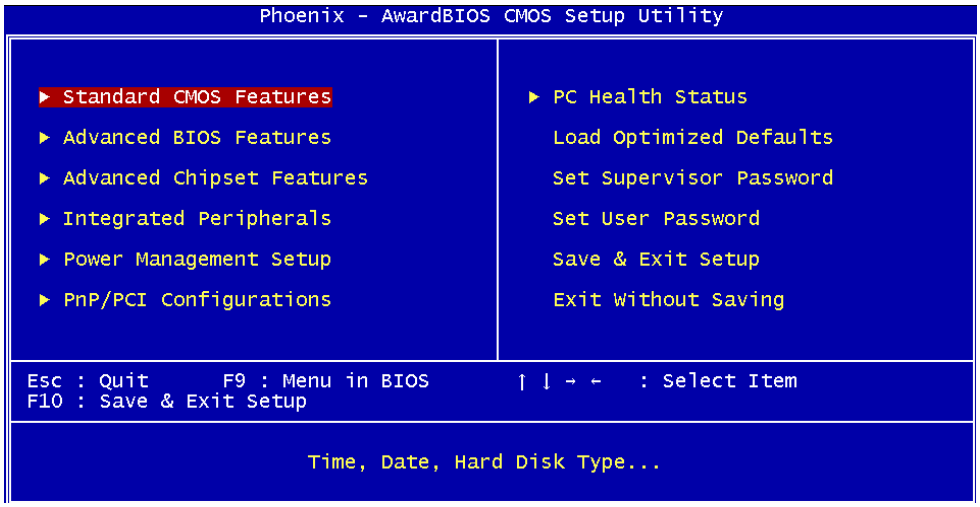
If, after making and saving system changes with the Setup utility, you find that this product no longer boots, start the BIOS setup and execute the following.

Load Optimized Defaults

7.4. BIOS Main Menu

When the BIOS Main Menu is displayed, the following items can be selected. Use the arrow keys to select items and the Enter key to accept and enter the sub-menu.

Note: The BIOS menu below is from B82 BIOS version B82FV10B.BIN. If you have a different BIOS version, the contents of the menu may differ.



Standard CMOS Features

This setup page includes the standard CMOS features.

Advanced BIOS Features

This setup page includes the enhanced AWARD BIOS features.

Advanced Chipset Features

This setup page includes the Chipset features

Integrated Peripherals

Change, set, or disable on board super I/O functions.

Power Management setup

This category determines the system power consumption of the system.

PNP/PCI Configurations

This category specifies the value (in units of PCI bus clocks) of the latency timer for the PCI bus master and the IRQ level for PCI devices.

PC health status

This page shows hardware monitor information.

Load Optimized Defaults

BIOS defaults indicate the most appropriate value of the system parameters for a standard system performance.

.

Set Supervisor Password

Change, set, or disable the password. It allows the supervisor to change BIOS settings.

Set Password

Change, set, or disable the password. It allows you to limit access to the system and to the setup, or just to the setup.

Save & exit setup

Save CMOS value changes to CMOS and exit setup.

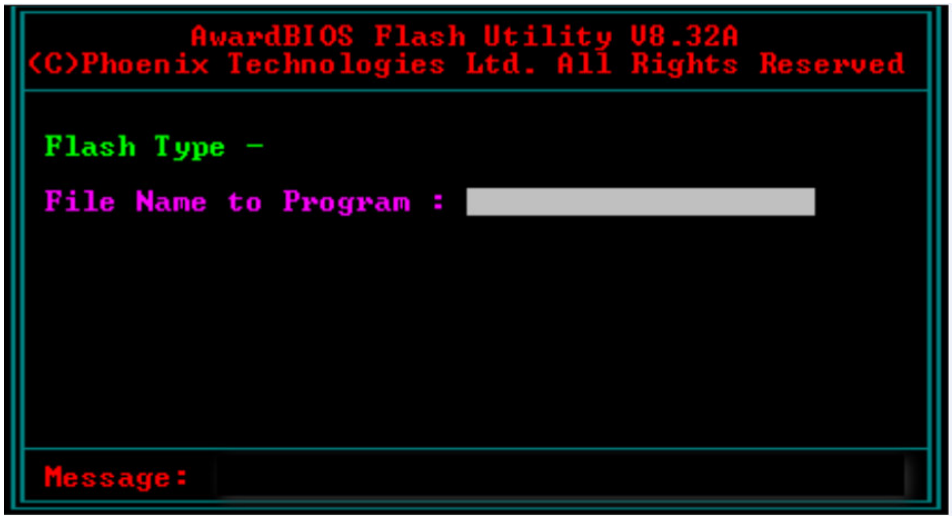
Exit without saving

Discard all CMOS value changes and exit setup.

8. BIOS Updating Procedure

To update the BIOS, you will need the new BIOS file and a flash utility, AF832A. EXE. You can download them from the web site or contact technical support or your sales representative.

1. Prepare one bootable device with DOS OS, save the new BIOS file along with the flash utility AF890.EXE to this boot device.
2. Reboot the system and enter the Award BIOS Setup Utility to set the first boot drive to your boot device.
3. Save the setting and reboot the system.
4. After the system booted from the boot device, execute the flash utility by typing AF832A.EXE **in DOS prompt**. The following screen will appear.



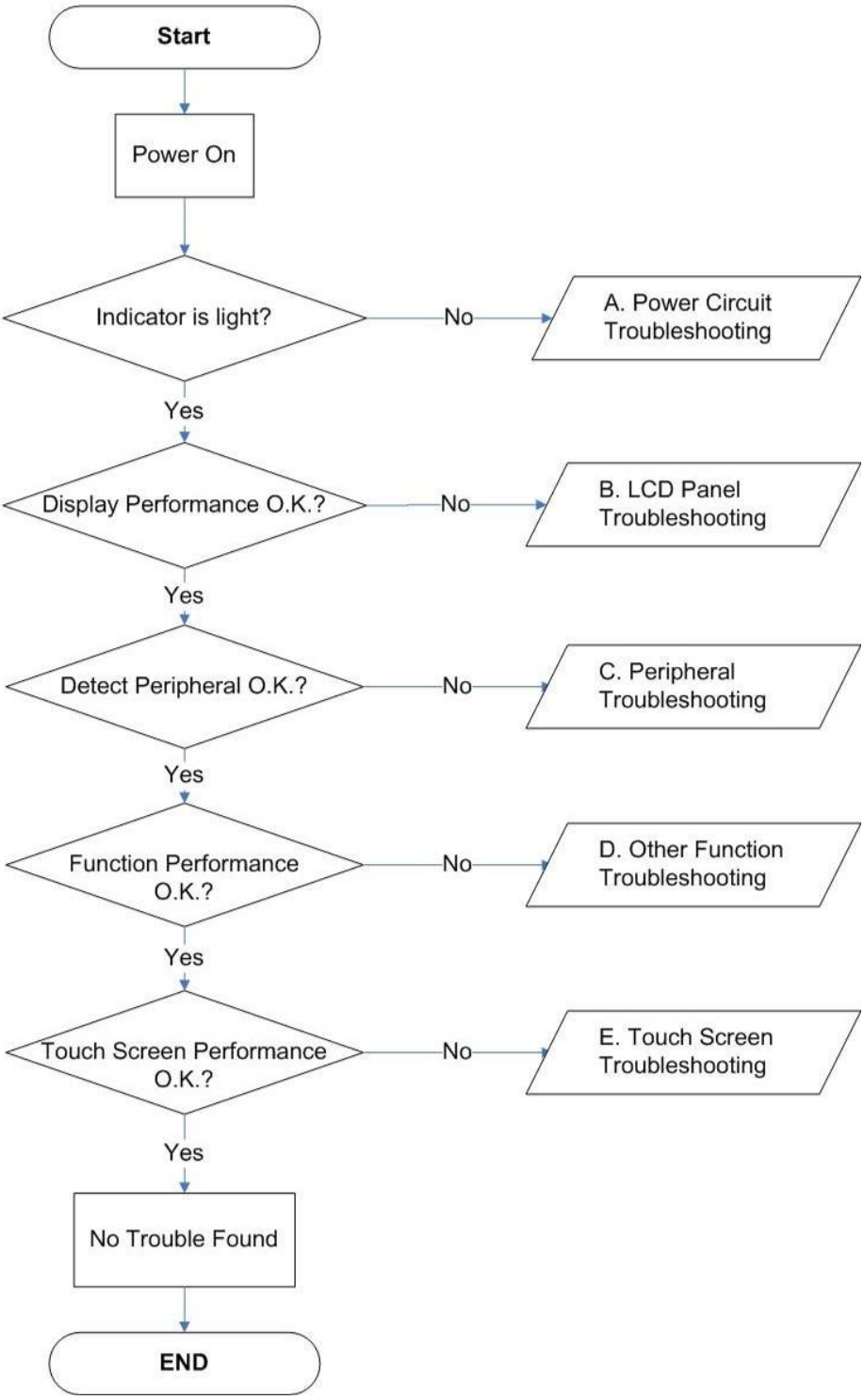
5. Type the new BIOS file name onto the gray area that is next to “File Name to Program” then press <Enter>.
6. The following will appear.

   Do You Want to Save BIOS (Y/N)

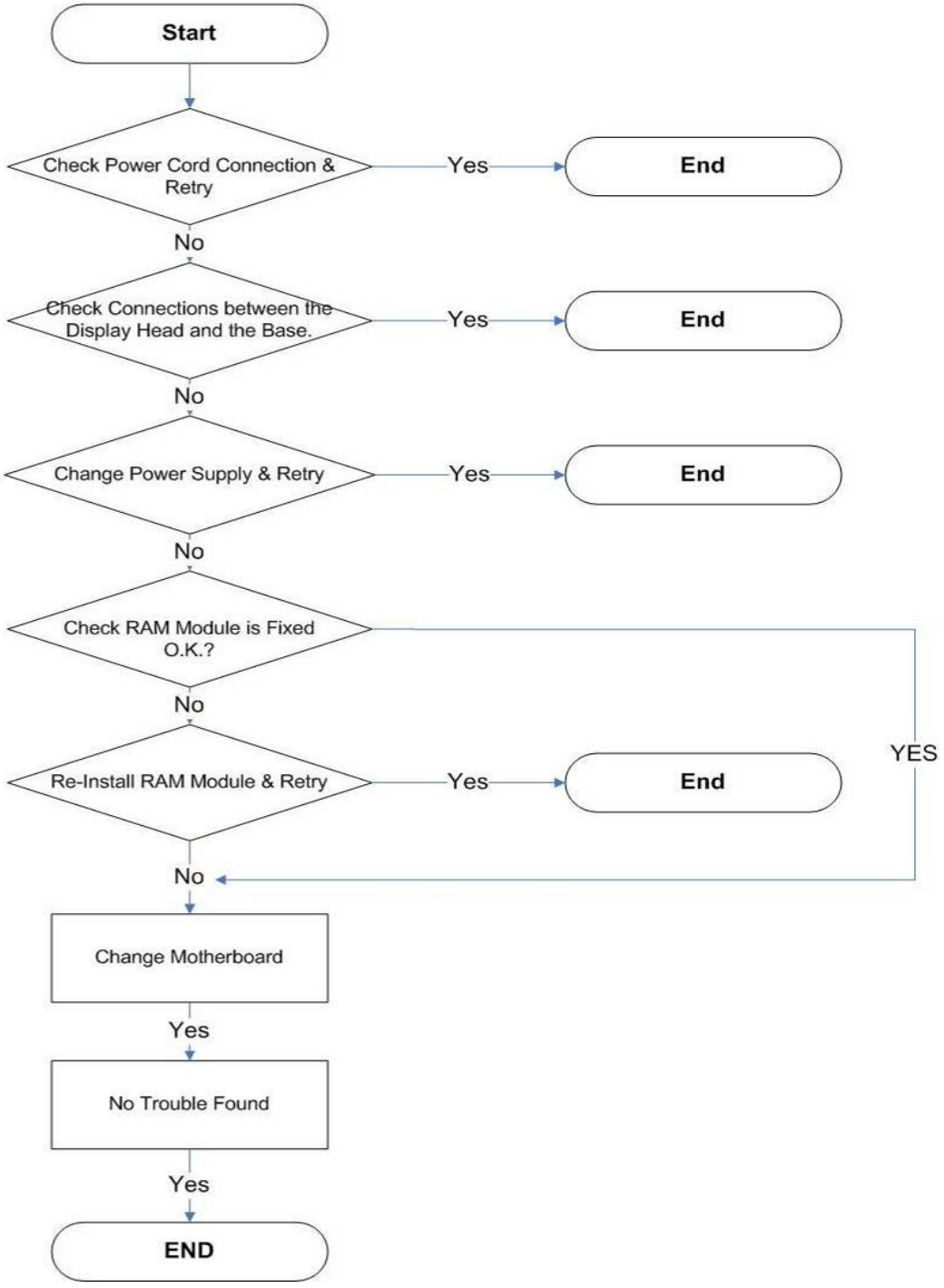
   This question refers to the current existing BIOS in your system. We recommend that you save the current BIOS and its flash utility; just in case you need to reinstall the BIOS. To save the current BIOS, press <Y> then enter the file name of the current BIOS. Otherwise, press <N>.
7. The following will then appear.

   Press “Y” to Program or “N” to Exit.
8. Press <Y> to flash the new BIOS.

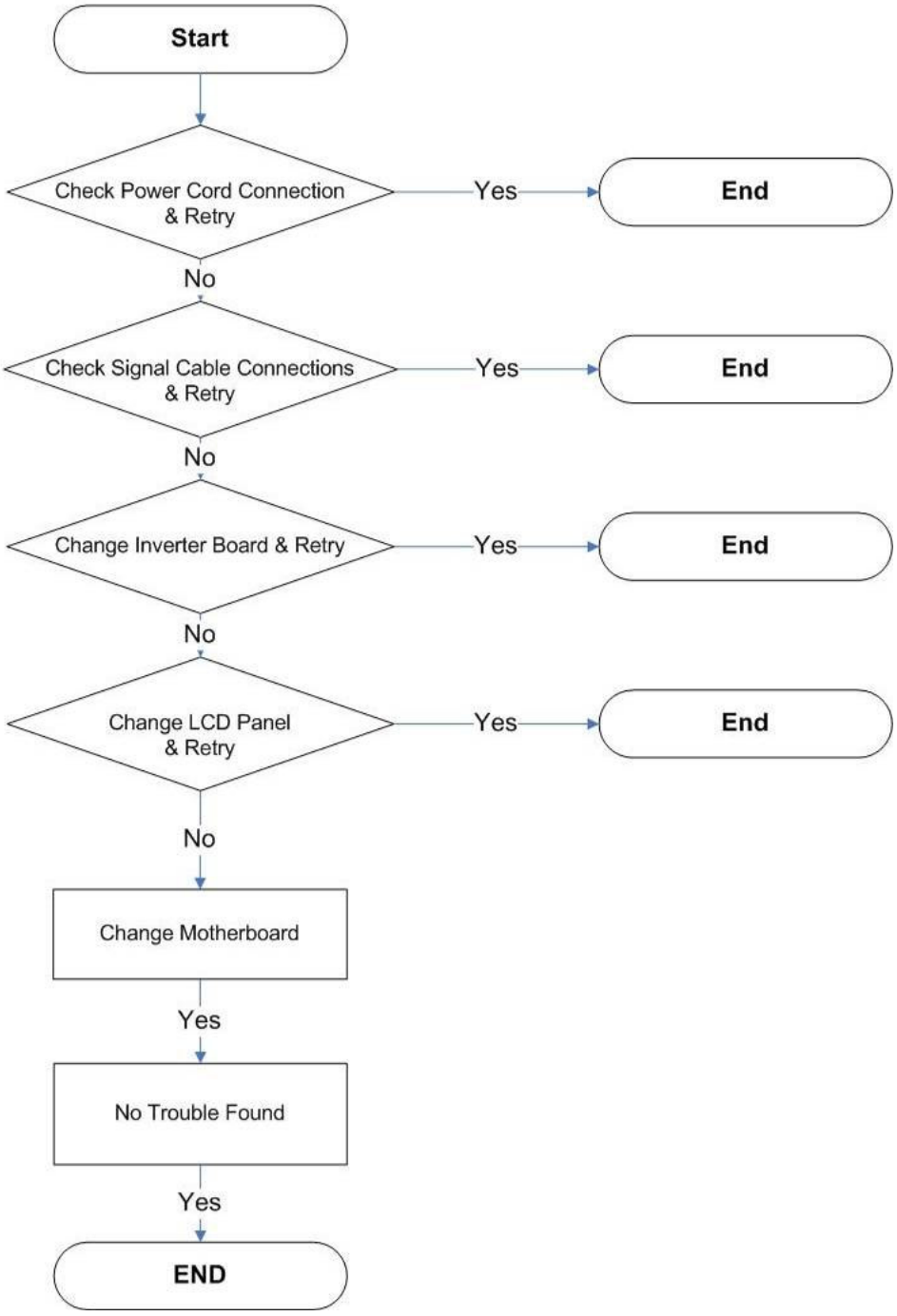
9. Troubleshooting



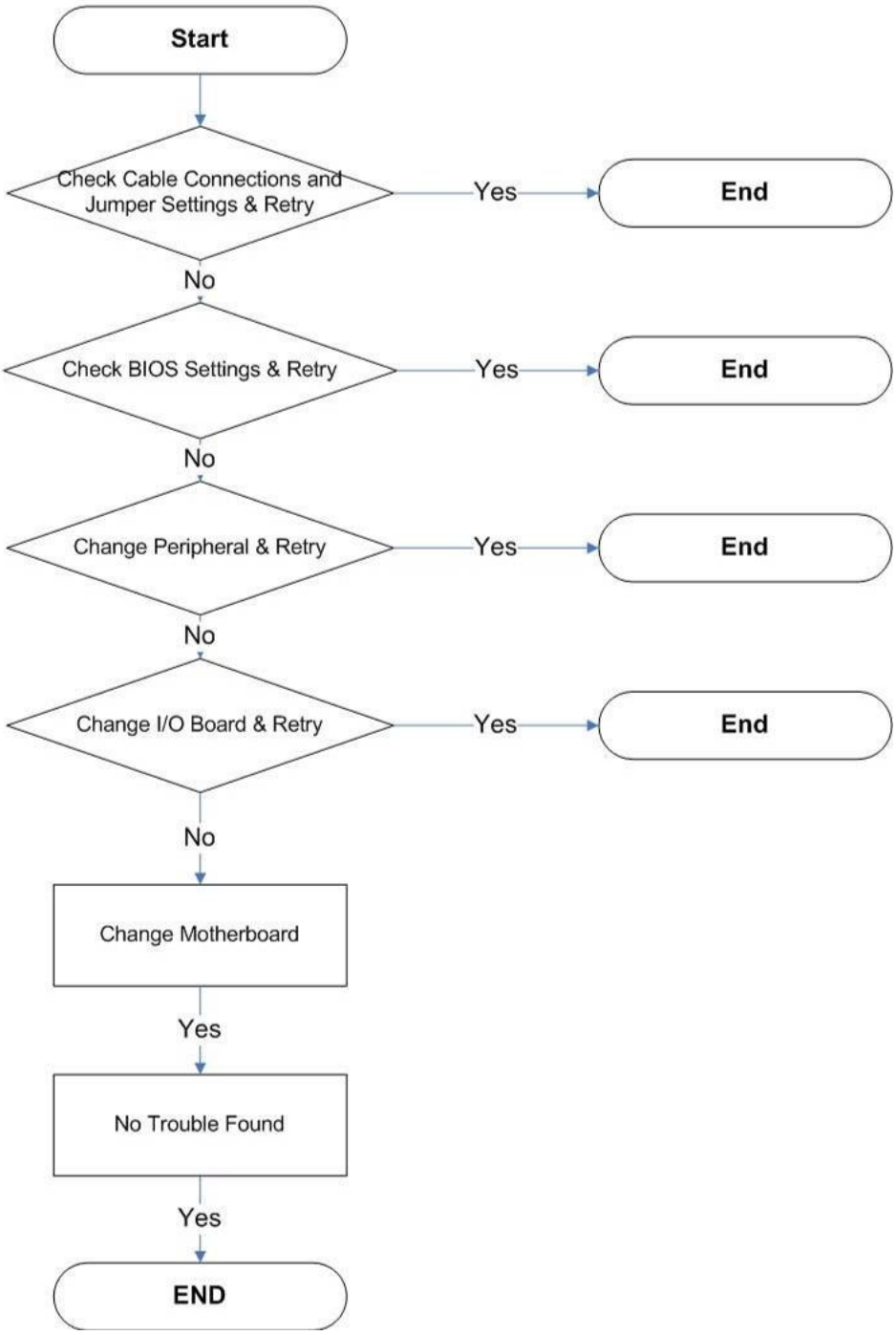
Power Circuit Troubleshooting



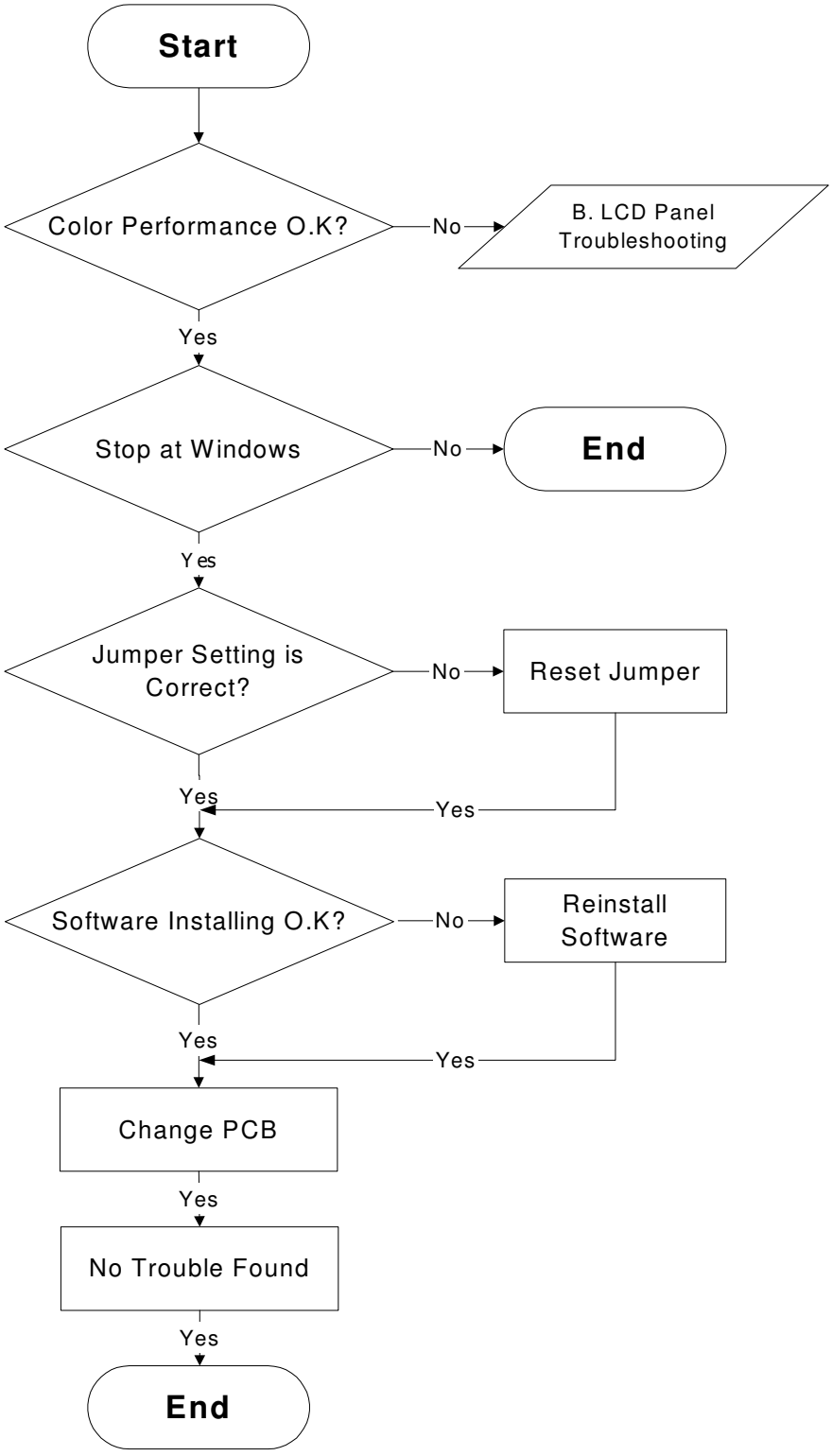
LCD Panel Troubleshooting



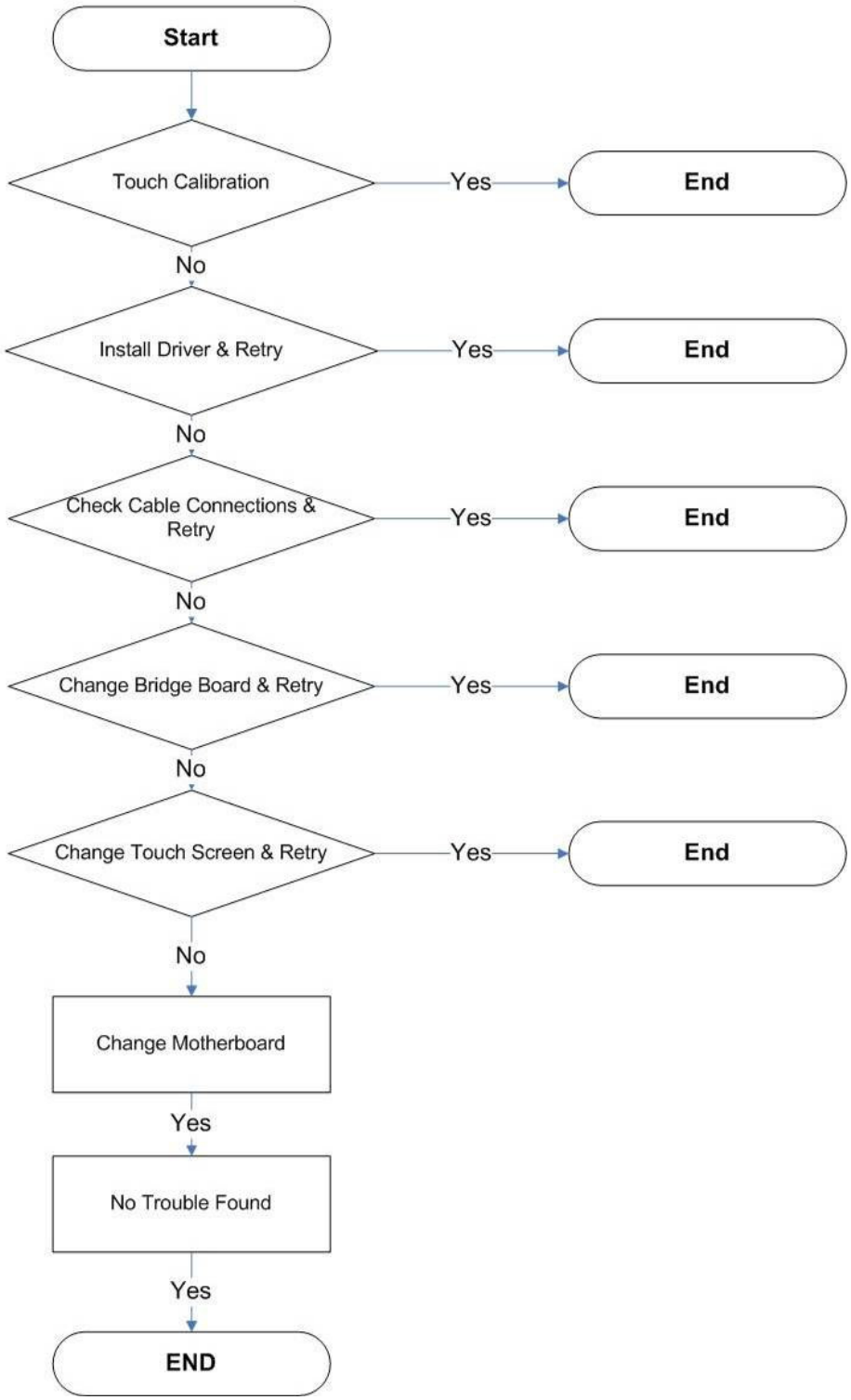
Peripheral Troubleshooting



Other Function Troubleshooting



Touch Screen Troubleshooting



Appendix A: Specification

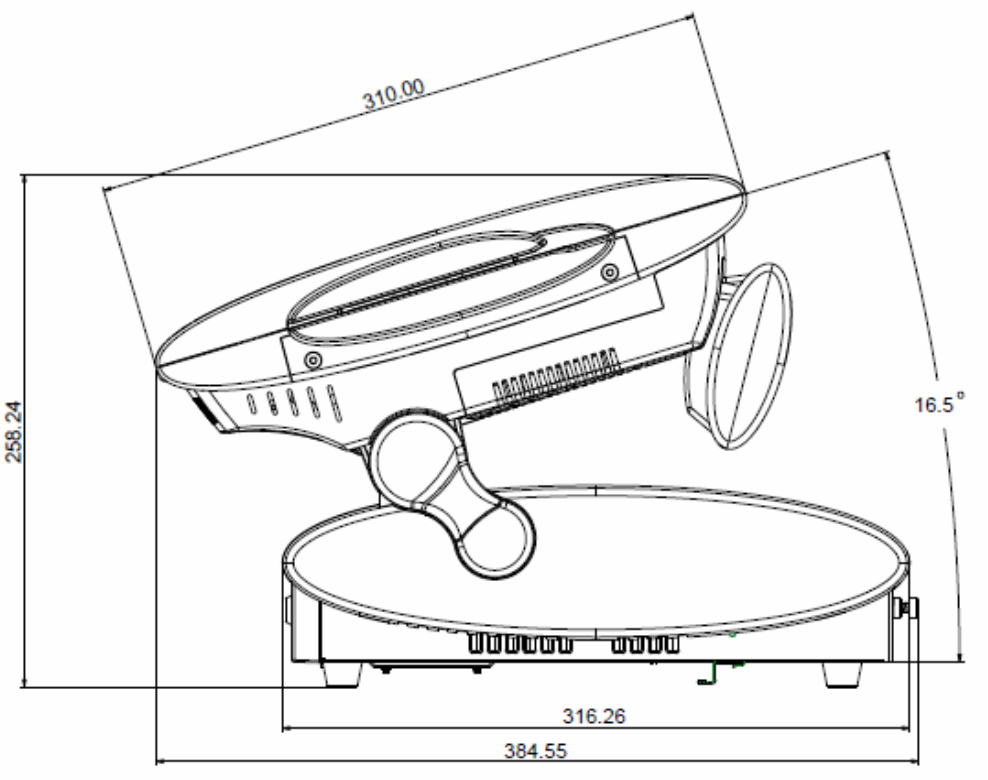
Mainboard	**Odyssé**
Motherboard	B82
Supported CPU	Pentium 4 - 2.8Ghz
Core Logic	Intel 852GM / ICH4
System Memory	2 x DDR MEMORY 400 MHz up to 2 GB
Graphic Memory	Shared Memory up to 64MB
Mini PCI Socket	1 x Mini PCI socket supported
Flash memory	Compact Flash socket Type I/II supported
Storage Devices	
HDD	1 x 3.5” HDD Drive Bay
ODD	1x Slim CD-ROM/DVD-ROM drive bay
LCD / Touch Panel	
LCD Size	15” TFT
Brightness (nits)	Up to 250 cd/m^2
Maximal Resolution	1024 x 768
Touch Screen Type	5-wire resistive
Tilt Angle (Degrees)	0°~60°
External I / O Ports	
Front I / O	
USB	2 x USB (1.1/ 2.0)
Rear I / O	
PS / 2	1 x Keyboard
Printer	1 x printer port
Thermal Printer	+24V DC
USB	4 x USB (1.1/ 2.0)
Serial/COM	4 x powered COM ports (pin 1 / pin 9 support +5V / +12V / standard signal by Jumper)
LAN (10 / 100)	1 x RJ45

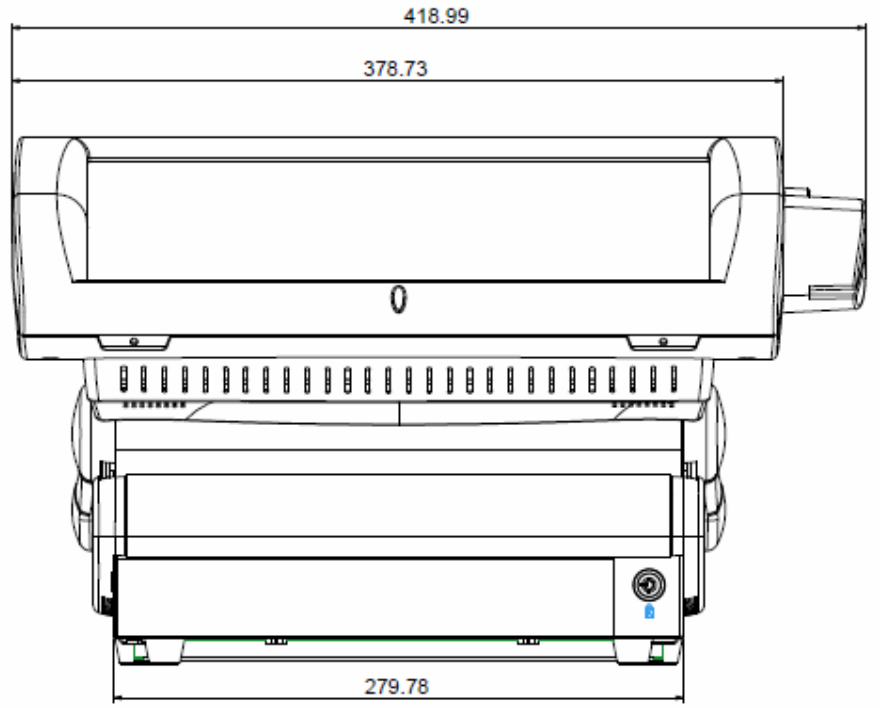
Rear I / O	
Cash Drawer	1 x RJ11 (with 12V / 24V)
Audio	1 x Line-in, 1 x Line-out
Power Supply	Internal 180W ATX
Speaker	2 x 2w internal speaker
Environmental	
EMC & Safety	FCC / CE Class A, LVD
Operating Temperature	5 °C ~ 35 °C
Options	
Magnetic Card Reader	3 Tracks magnetic card reader (PS/2 or RS-232 interface)
iButton Reader	PS/2 and RS-232 interface
Magnetic Card Reader + iButton Reader	PS/2 interface (Magnetic Card Reader) PS/2 interface and RS-232 interface (iButton Reader)
RFID Reader	USB interface
Biometric Reader (fingerprint) + Magnetic Card Reader	USB interface (Biometric Reader) PS/2 interface (Magnetic Card Reader)
Customer Display	VFD customer display, COM4 12V power
Wi- Fi Wireless LAN	Mini PCI 802.11a/b/g wireless LAN
Second Display	8.4” LCD, 800x600 resolution, brightness 250 nits
SATA RAID	Mini PCI SATA RAID card
Dimensions (W x D x H) mm	418x361x222 (0° Vertical Display) 418x381x325 (60° Tilt Display)
(W x D x H) in	16.4 x 14.2 x 8.7 (0° Vertical Display) 16.4 x 14.9 x 12.7 (60° Tilt Display)

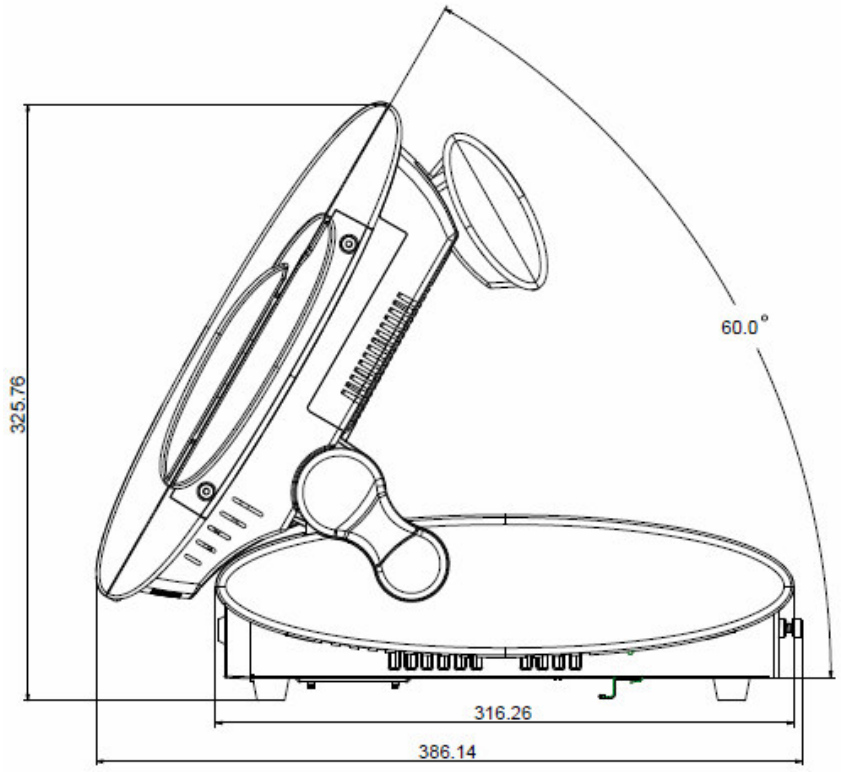
· This specification is subject to change without prior notice.

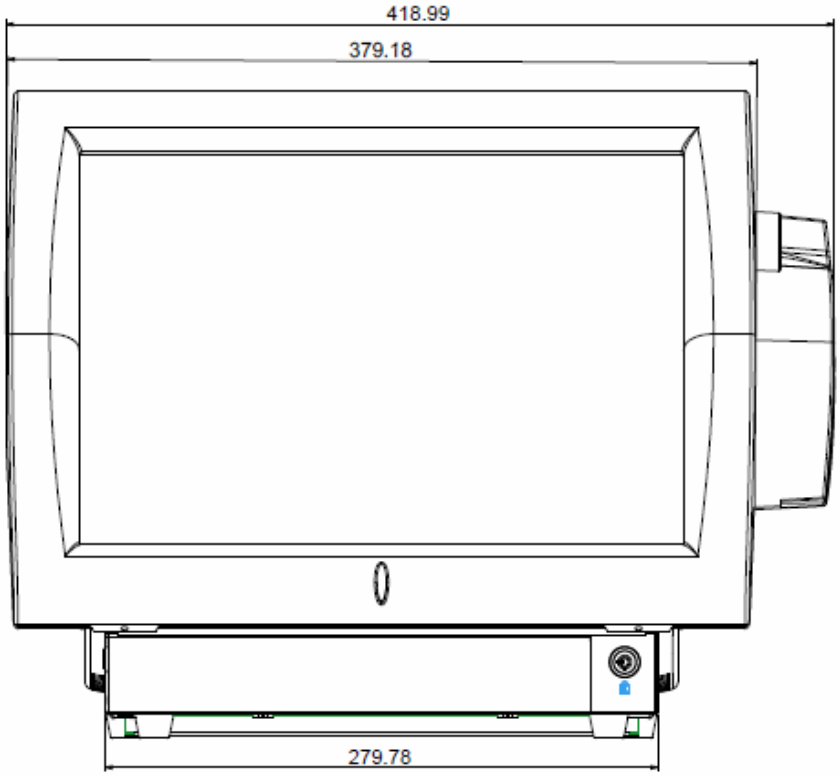
Appendix B: Dimensional Drawings

All dimensions in mm






60.0°
325.76
316.26
386.14


418.99
379.18
279.78

Appendix C: Customer Display Command Settings

The Customer Display is connected to serial port **COM4**
The default settings for the Customer Display are:

- **EPSON ESC/POS command set**
- **9600 Baud, 8 bits, no parity, no flow control**

Software Utilities

The following software utilities are provided for the customer display on the driver CD

Folder/File	File Description
<CD>:\Common\CustomerDisplay\Configuration	Configuration utility
<CD>:\Common\CustomerDisplay\Font_Editor	Font Editor utility
<CD>:\Common\CustomerDisplay\Firmware_Update	Firmware update utility

A user manual for the utilities is available on the CD at the following location:

Folder/File	File Description
<CD>:\Common\CustomerDisplay\	User manual

Software Status Setting Commands

When the system is powered on, it will read the EEPROM setting to set the **Command Type**, **Baud Rate**, **Parity, Data Length, Demo Mode** setting and **International Character Set**. The user can change the Software Status Setting Commands using the command sequences described below:

Baud Rate Setting Command

STX 05 B n ETX /Change the baud rate setting/

ASCII Format STX 05 B n ETX

Dec. Format [02] [05] [66] n [03]

Hex. Format [02h][05h][42h] n [03h] n=30h, 31h, 36h or 37h

Description Change the display communication baud rate. The baud rate setting can be selected from 4800 to 38400.

n	Baud rate
31h	4800
30h	9600
37h	19200
36h	38400

Parity Check Setting Command

STX 05 P n ETX /Change the Parity check setting/

ASCII Format STX 05 P n ETX

Dec. Format [02] [05] [80] n [03]

Hex. Format [02h][05h][50h] n [03h] n=31h, 33h

Description Change the display communication parity. Set 8 data bit and the parity set for even or non-parity.

n	Parity
31h	None
33h	Even

Data Length Setting Command

STX 05 L n ETX /Change the Data Length Setting/

ASCII Format STX 05 L n ETX

Dec. Format [02] [05] [76] n [03]

Hex. Format [02h][05h][4Ch] n [03h] n=37h, 38h

Description Change the display communication data length. Set 8-bits or 7-bits data length.

n	Parity
37h	7 bits
38h	8 bits

International Character Set Setting Command

n	Character Set (20h – 7Fh)	Code Table (80H-FFH)	Note
30h	U.S.A.	CP-437 (USA, Standard Europe)	
31h	FRANCE	CP-858 (Multilingual + Euro Symbol)	
32h	GERMANY		
33h	U.K.		
34h	DENMARK I		
35h	SWEDEN		
36h	ITALY		
37h	SPAIN		
38h	JAPAN	Katakana	
39h	NORWAY	CP-858 (Multilingual+ Euro Symbol)	
3Ah	DENMARK II		
3Bh	Slawie		
3Ch	RUSSIA		
3Dh	U.S.A.	CP-860 (Portuguese)	
3Eh	U.K.	Greek	
3Fh	U.S.A.	CP-852 (Hungary)	
40h	U.S.A.	CP-862 (Hebrew)	
41h	U.S.A.	CP-863 (Canadian-French)	
42h	U.S.A.	CP-865 (Nordic)	
43h	U.S.A.	CP-866 (Cyrillic)	
44h	U.S.A.	Windows-1251 (Cyrillic)	
45h	U.S.A.	Windows-1252 (West European Latin)	
46h	U.S.A.	Windows-1255 (Hebrew)	
47h	U.S.A.	Windows-1257 (Baltic)	
48h	U.S.A.	Windows-1253 (Greek)	
49h	U.S.A.	Windows-1250 (East European Latin)	
4Ah ~ 4Eh	Reserved	Reserved	
4Fh	User Defined Character Set		

Select International Character Set Command

STX 05 T n ETX /Select International Character Set Command/

ASCII Format STX 05 T n ETX

Dec. Format [02] [05] [84] n [03]

Hex. Format [02h][05h][54h] n [03h] 00h≦n≦1Fh

Description Select International Character Set

Select international character set (20H~7Fh) by command "**STX 05 T n ETX**"

n	International character set	n	International character set	n	International character set
00h	U.S.A.	**06h**	ITALY	**0Ch**	RUSSIA
01h	FRANCE	**07h**	SPAIN	**0Dh**	Not used
02h	GERMANY	**08h**	JAPAN	**0Eh**	Not used
03h	U.K.	**09h**	NORWAY	**0Fh**	Not used
04h	DENMARK I	**0Ah**	DENMARK II	**1Fh**	User-Defined
05h	SWEDEN	**0Bh**	SLAVONIC		

Select Character Code Table Command

STX 05 U n ETX /Select Character Code Table Command/

ASCII Format STX 05 U n ETX

Dec. Format [02] [05] [85] n [03]

Hex. Format [02h][05h][55h] n [03h] 00h≦n≦1Fh

Description Select Character Code Table

Select character code table (80H~FFh) by command "**STX 05 U n ETX**"

n	Character code table	n	Character code table	n	Character code table
00h	CP-437 (USA, Standard Europe)	**07h**	Russia	**0Fh**	Windows-1257 (Baltic)
01h	Katakana (for Japan)	**08h**	Greek	**10h**	Windows-1252 (West European Latin)
02h	CP-850 (Multilingual)	**09h**	CP-852 (Hungary)	**11h**	Windows-1253 (Greek)
03h	CP-860 (Portuguese)	**0Ah**	CP-862 (Hebrew)	**12h**	Windows-1250 (East European Latin)
04h	CP-863 (Canadian-French)	**0Bh**	CP-866 (Cyrillic)	**13h**	CP-858 (Multilingual+ Euro Symbol)
05h	CP-865 (Nordic)	**0Ch**	Windows-1251 (Cyrillic)	**1Fh**	User Defined
06h	Slawie	**0Eh**	Windows-1255 (Hebrew)		

Command Type Setting Command

STX 05 C n ETX /Change the command type setting/

ASCII Format STX 05 C n ETX

Dec. Format [02] [05] [67] n [03]

Hex. Format [02h][05h][43h] n [03h] 30h≦ n≦37h

Description This command will change the command type and initialize the display.

The display emulation mode is based on DSP800/ ESC/ ADM 787/ POS7300/ AEDEX/ UTC/ CD5220 mode

n	Command Type	n	Command Type
30h	DSP800	**34h**	AEDEX
31h	ESC/POS	**35h**	UTC/P
32h	POS7300	**36h**	UTC/S
33h	ADM787	**37h**	CD5220

Run Demo message

STX 05 D 08 ETX /Run demo message/

ASCII Format STX 05 D 08 ETX

Dec. Format [02][05][68][08][03]

Hex. Format [02h][05h][44h][08h][03h]

Description Run demo message for the display.

The demo message is available in POS7300, DSP800, EPSON ESC/POS and CD5220 command modes.

Show Firmware Version

STX 05 V 01 ETX /Show Firmware Version/

ASCII Format STX 05 V 01 ETX

Dec. Format [02][05][86][01][03]

Hex. Format [02h][05h][56h][01h][03h]

Description Show firmware version.

User Defined Character Command Set

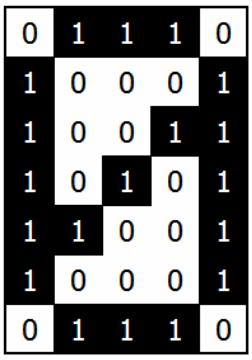
Function	Command	Description
Del 1 Character	[02h][FDh][55h][00h][n]	Delete one user defined character data. [**n**] = 20h ~ FFh for displayable character codes
Del All Characters	[02h][FDh][55h][01h][00h]	Delete All User-Define Characters
Set 1 Character	[02h][FDh][55h][02h][**n**] [**m1**][**m2**][**m3**][**m4**][**m5**]	Set one user defined character [**n**] = 20h ~ FFh for displayable character codes/[**m1**]~[**m5**] = Character data byte 1 ~ 5/Ref. table below
Read 1 Character	[02h][FDh][55h][03h][**n**]	Read one user define character data [**n**] = 20h ~ FFh for displayable character codes
Read All Characters	[02h][FDh][55h][04h][00h]	Read all user defined character data (Character 20h ~ FFh)

Set User-Define Character 5x7 dot layer out

Bit assignment:	bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit0

5x7 dot bit assignment: 1 means fill dot, 0 means empty dot.

m1 bit 7	m1 bit 6	m1 bit 5	m1 bit 4	m1 bit 3
m1 bit 2	m1 bit 1	m1 bit 0	m2 bit 7	m2 bit 6
m2 bit 5	m2 bit 4	m2 bit 3	m2 bit 2	m2 bit 1
m2 bit 0	m3 bit 7	m3 bit 6	m3 bit 5	m3 bit 4
m3 bit 3	m3 bit 2	m3 bit 1	m3 bit 0	m4 bit 7
m4 bit 6	m4 bit 5	m4 bit 4	m4 bit 3	m4 bit 2
m4 bit 1	m4 bit 0	m5 bit 7	m5 bit 6	m5 bit 5



Ex: character “0”

m1 byte data = 0x74

m2 byte data = 0x67

m3 byte data = 0x5C

m4 byte data = 0xC5

m5 byte data = 0xC0

Command List Table

Command Set / Command	POS 7300	CD 5220	EPSON D101	UTC/S	UTC/P	AEDEX	ADM 788	DSP 800
Move cursor right	O	O	O					
Move cursor left	O	O	O					
Move cursor up	O	O	O					
Move cursor down	O	O	O					
Move cursor to right-most position	O	O	O					
Move cursor to left-most position	O	O	O					
Move cursor to home position	O	O	O					
Move cursor to bottom position	O	O	O					
Move cursor to specified position	O	O	O					O
Clear display screen	O	O	O	O			O	
Clear cursor line	O	O	O					
Brightness adjustment	O	O	O					O
Blink display screen	O	O	O					O
Initialize display	O	O	O					O
Select character code table	O	O	O					
Select international character set	O	O	O					O
Select/cancel reverse character	O		O					
Overwrite mode	O	O	O	O				
Vertical scroll mode	O	O	O	O				
Horizontal scroll mode	O	O	O					
Set/cancel the window range	O	O	O					
Select peripheral device	O	O	O					O
Set starting/ending position of macro definition			O					
Execute and quit macro			O					
Execute self-test	O	O	O					O
Display time	O		O		O	O		
Display time continuously	O		O					
Display position	O			O				
Cursor on/off	O	O	O	O				
Change to UTC enhanced mode				O				
Change to UTC standard mode					O			
Write string to upper line	O	O			O	O		
Upper line message continuous scroll	O	O			O	O		
Bottom line message scroll continuously	O							
Message vertical down scroll continuously	O							
Message vertical upper scroll continuously	O							
Carriage return	O			O			O	
Line feed	O			O				
Back space	O			O				
Horizontal tab	O			O				
Command type select		O	O					O
Upper line message scroll once pass					O	O		
Change attention code					O	O		
Two line display					O	O		
Clear upper line and move cursor to upper left-end position							O	

Command Set / Command	POS 7300	CD 5220	EPSON D101	UTC/S	UTC/P	AEDEX	ADM 788	DSP 800
Clear bottom line and move cursor to bottom left-end position							O	
Set period to upper line, last n position							O	
Set line blinking, upper line	O						O	
Clear line blinking, upper line	O						O	
Clear field 1 and move cursor to field 1, first position							O	
Clear field 2 and move cursor to field 2,first position							O	
Clear display range from n position to m								O
Save the current displaying data to n layer for								O
Turn annunciator on/off	O		O					
Specify period	O		O					
Specify comma	O		O					
Specify semicolon (period + comma)	O		O					
Set/Cancel User-Define Character Set			O					
Create User-define Character			O					O
Delete All User-Define Character			O					
Store User-Define Character to EEPROM			O					
Load User-Define Character from EEPROM			O					
Delete 1 User-Define Character								O

Command Details

POS7300 Series Command List

Command	Code (hex)	Function Description
ESC F A **[DATA]** CR	1B 46 41 **[DATA]** 0D	Write string to upper line ➢ Maximal **[DATA]** length is 40
ESC F B **[DATA]** CR	1B 46 42 **[DATA]** 0D	Write string to lower line ➢ Maximal **[DATA]** length is 40
ESC F D **[DATA]** CR	1B 46 44 **[DATA]** 0D	Upper line message scroll continuously ➢ Maximal **[DATA]** length is 40
ESC F O **[DATA]** CR	1B 46 4F **[DATA]** 0D	Bottom line message scroll continuously ➢ Maximal **[DATA]** length is 40
ESC P **x y**	1B 50 **x y**	Move cursor to specified position ➢ **x** = 1 ~ 14h, for columns location. ➢ **y** = 1 ~ 2, for lines location.
ESC _ **n**	1B 5F **n**	Set cursor on/off ➢ **n** = 00 ~ 01
ESC DC1	1B 11	Overwrite mode
ESC DC2	1B 12	Vertical scroll mode
ESC DC3	1B 13	Horizontal scroll mode
ESC @	1B 40	Initialize display
US MD1 **n**	1F 01 **n**	Message vertical upper scroll continuously ➢ **n** = 01 ~ 0Ch
US MD2 **n**	1F 02 **n**	Message vertical down scroll continuously ➢ **n** = 01 ~ 0Ch
US DC1 **n**	1F 11 **n**	Set line blinking ➢ **n** = '1' ~ '2' ■ **n** = '1' up line ■ **n** = '2' low line
US DC2 **n**	1F 12 **n**	Clear line blinking ➢ **n** = '1' ~ '2' ■ **n** = '1' up line ■ **n** = '2' low line
US # **n x**	1F 23 **n x**	Turn annunciator on/off. ➢ **n** = 0 for annunciator off **n** = 1 for annunciator on ➢ **x** = 1 ~ 14h, for columns location.
US , **n**	1F 2C **n**	Specify comma ➢ **n** = a displayable character code
US . **n**	1F 2E **n**	Specify period ➢ **n** = a displayable character code
US ; **n**	1F 3B **n**	Specify semicolon (period + comma) ➢ **n** = a displayable character code
US @	1F 40	Execute self - test
US E **n**	1F 45 **n**	Blink display screen ➢ **n** = 00h ~ FFh ■ **n** = 0 for no blink
US T h m	1F 54 h m	Display time ➢ 0 ≦ h ≦ 17h, for hours setting. ➢ 0 ≦ m ≦ 3Bh, for minutes setting.
US U	1F 55	Display time continuously
US X **n**	1F 58 **n**	Brightness adjustment ➢ **n** = 1 ~ 4
US r **n**	1F 72 **n**	Select/cancel reverse character. ➢ **n** = 00,01
NULL H	0 48	Move cursor up
NULL K	0 4B	Move cursor left
NULL M	0 4D	Move cursor right
NULL P	0 50	Move cursor down
NULL G	0 47	Move cursor to left-most position

Command	Code (hex)	Function Description
NULL O	0 4F	Move cursor to right-most position
BS	08	Back space
HT	09	Horizontal tab
LF	0A	Line feed
HOM	0B	Move cursor to home position
US B	1F 42	Move cursor to bottom position
CLR	0C	Clear display screen
CLR	12	
CR	0D	Carriage return
CAN	18	Clear cursor line, and clear string mode
DLE n	10 n	Display position ➢ n = 0 ~ 27h, for location.
ESC W **n s x1 y1 x2 y2**	1B 57 **n s x1 y1 x2 y2**	Set or cancel the window range ➢ **n** = 1 ~ 4, for window number ➢ **s** = 0: cancel **s** = 1: set ➢ 1 ≦ **x1** ≦ **x2** ≦ 14h, for columns location. ➢ 1 ≦ **y1** ≦ **y2** ≦ 2, for lines location.
ESC R n	1B 52 n	Select international character set (20H~7Fh). ➢ n = 00 ~ 1Fh. See note *1
ESC t n	1B 74 n	Select character code table (80H~FFh). ➢ n = 00 ~ 1Fh. See note *2
ESC = n	1B 3D n	Select peripheral device, display or printer ➢ n = 1~3 ■ n = '1': enable printer only ■ n = '2': enable display only ■ n = '3': enable both of printer and display

Note:

1. Select international character set (20H~7Fh) by command “ESC R **n**”

n	International character set	n	International character set	n	International character set
00h	U.S.A.	**05h**	SWEDEN	**0Ah**	DENMARK II
01h	FRANCE	**06h**	ITALY	**0Bh**	SLAVONIC
02h	GERMANY	**07h**	SPAIN	**0Ch**	RUSSIA
03h	U.K.	**08h**	JAPAN		
04h	DENMARK I	**09h**	NORWAY	**1Fh**	User Defined

2. Select character code table (80H~FFh) by command “ESC t **n**”

n	Character code table	n	Character code table	n	Character code table
00h	CP-437 (USA, Standard Europe)	**07h**	Russia	**0Fh**	Windows-1257 (Baltic)
01h	Katakana (for Japan)	**08h**	Greek	**10h**	Windows-1252 (West European Latin)
02h	CP-850 (Multilingual)	**09h**	CP-852 (Hungary)	**11h**	Windows-1253 (Greek)
03h	CP-860 (Portuguese)	**0Ah**	CP-862 (Hebrew)	**12h**	Windows-1250 (East European Latin)
04h	CP-863 (Canadian-French)	**0Bh**	CP-866 (Cyrillic)	**13h**	CP-858 (Multilingual+ Euro Symbol)
05h	CP-865 (Nordic)	**0Ch**	Windows-1251 (Cyrillic)		
06h	Slawie	**0Eh**	Windows-1255 (Hebrew)	**1Fh**	User Defined

CD5220 Standard Mode Command List

Command	Code (hex)	Function Description
ESC DC1	1B 11	Overwrite mode
US SOH	1F 01	
ESC DC2	1B 12	Vertical scroll mode
US STX	1F 02	
ESC DC3	1B 13	Horizontal scroll mode
US ETX	1F 03	
ESC Q A **[DATA]** CR	1B 51 41 **[DATA]** 0D	Set the string display mode, write string to upper line. *1 ➢ Maximal **[DATA]** length is 20
ESC Q B **[DATA]** CR	1B 51 42 **[DATA]** 0D	Set the string display mode, write string to lower line. *1 ➢ Maximal **[DATA]** length is 20
ESC Q D **[DATA]** CR	1B 51 44 **[DATA]** 0D	Upper line message scroll continuously. *1 *2 ➢ Maximal **[DATA]** length is 40
ESD [D	1B 5B 44	Move cursor left
BS	08	
ESC [C	1B 5B 43	Move cursor right
HT	09	
ESC [A	1B 5B 41	Move cursor up
US LF	1F 0A	
ESC [B	1B 5B 42	Move cursor down
LF	0A	
ESC [H	1B 5B 48	Move cursor to home position
HOM	0B	
ESC [L	1B 5B 4C	Move cursor to left-most position
CR	0D	
ESC [R	1B 5B 52	Move cursor to right-most position
US CR	1F 0D	
ESC [K	1B 5B 4B	Move cursor to bottom position
US B	1F 42	
ESC # **n**	1B 23 **n**	Command type select ➢ **n** = 30h ~ 37h
US @	1F 40	Execute self test
US E **n**	1F 45 **n**	Blink display screen ➢ **n** = 00h ~ FFh ■ **n** = 0 for no blink
ESC l **x y**	1B 6C **x y**	Move cursor to specified position ➢ **x** = 1 ~ 14h, for columns location. ➢ **y** = 1,2, for lines location.
US $ **x y**	1F 24 **x y**	
ESC # **n**	1B 23 **n**	Command type select ➢ **n** = 30h ~ 37h
US E **n**	1F 45 **n**	Blink display screen ➢ **n** = 00h ~ FFh ■ **n** = 0 for no blink
ESC l **x y**	1B 6C **x y**	Move cursor to specified position ➢ **x** = 1 ~ 14h, for columns location. ➢ **y** = 1,2, for lines location.
ESC @	1B 40	Initialize display

Command	Code (hex)	Function Description
ESC W **s x1 x2 y**	1B 57 **s x1 x2 y**	Set or cancel the window range at horizontal scroll mode ➢ 1 ≦ **x1** ≦ **x2** ≦ 14h, for columns location. ➢ **y** = 1~2, for lines location. ➢ **s** = 0: cancel **s** = 1: set
CLR	0C	Clear display screen, and clear string mode
CAN	18	Clear cursor line, and clear string mode
ESC * **n**	1B 2A **n**	Brightness adjustment
US X **n**	1F 58 **n**	➢ **n** = 1 ~ 4, **n** = 4 for highest brightness
ESC _ **n**	1B 5F **n**	Set cursor on/off ➢ **n** = 1: cursor on **n** = 0: cursor off
ESC f **n**	1B 66 **n**	Select international Character ➢ About **n**, refer. *3
ESC c **n**	1B 63 **n**	Select character code table ➢ About **n**, refer. *4
ESC = **n**	1B 3D **n**	Select peripheral device, display or printer ➢ **n**='1': enable printer only **n**='2': enable display only **n**='3': enable both of printer and display

Note:

1. While using command “ESC Q A” or “ESC Q B”, other commands cannot be used except when using command “CLR” or “CAN” to change operating mode.
2. When using command “ESC Q D”, the upper line message will scroll continuously until a new command is received, it will then clear the upper line and move the cursor to the upper left-end position.
3. Select the international Character set (20h – 7Fh) by command “ESC f **n**”.

Parameter “n”		International Character Set	Parameter “n”		International Character Set
Character	Hex		Character	Hex	
‘A’	41h	U.S.A.	‘N’	4Eh	Norway
‘G’	47h	Germany	‘W’	57h	Sweden
’I’	49h	Italy	‘D’	44h	Denmark I
‘J’	4Ah	Japan	‘E’	45h	Denmark II
‘U’	55h	U.K.	‘L’	4Ch	Slavonic
‘F’	46h	France	‘R’	52h	Russia
‘S’	53h	Spain		1Fh	User-Define

4. Select character code table (80H-FFH) by command “ESC c **n**”.

Parameter “n”		character Code Table
Character	**Hex**	
‘A’	41h	Compliance with ASCII code (CP-437)
‘J’	4Ah	Compliance with JIS code (Katakana)
‘L’	4Ch	Compliance with Slawie code
‘R’	52h	Compliance with RUSSIA code
‘M’	4Dh	CP-850 (Multilingual)
‘P’	50h	CP-858 (Multilingual+ Euro Symbol)
‘p’	70h	CP-860 (Portuguese)
‘F’	46h	CP-863 (Canadian-French)
‘N’	4Eh	CP-865 (Nordic)
‘u’	75h	CP-852 (Hungary)
‘H’	48h	CP-862 (Hebrew)
‘C’	43h	CP-866 (Cyrillic)
‘G’	47h	Greek
‘c’	63h	Windows-1251 (Cyrillic)
‘W’	57h	Windows-1252 (West European Latin)
‘h’	68h	Windows-1255 (Hebrew)
‘B’	42h	Windows-1257 (Baltic)
‘g’	67h	Windows-1253 (Greek)
‘E’	45h	Windows-1250 (East European Latin)
	1Fh	User Defined

UTC Standard Mode Command List

Command	Code (hex)	Function Description
BS	08	Back space
HT	09	Horizontal tab
LF	0A	Line feed
CR	0D	Carriage return
DLE **n**	10 **n**	Display position ➢ **n** = 0 ~ 27h, for location.
DC1	11	Over write display mode
DC2	12	Vertical scroll mode
DC3	13	Cursor on
DC4	14	Cursor off
US	1F	Clear display
ESC d	1B 64	Change to UTC enhanced mode

UTC Enhanced Mode Command List

Command	Code (hex)	Function Description
ESC u A **[DATA]** CR	1B 75 41 **[DATA]** 0D	Upper line display ➢ Maximal **[DATA]** length is 20
ESC u B **[DATA]** CR	1B 75 42 **[DATA]** 0D	Bottom line display ➢ Maximal **[DATA]** length is 20
ESC u D **[DATA]** CR	1B 75 44 **[DATA]** 0D	Upper line message scroll continuously ➢ Maximal **[DATA]** length is 40
ESC u E **h h** : **m m** CR	1B 75 45 **h h** ':' **m m** 0D	Display time ➢ **h**, **m** = '0' ~ '9'
ESC u F **[DATA]** CR	1B 75 46 **[DATA]** 0D	Upper line message scroll Once pass ➢ Maximal **[DATA]** length is 40
ESC u H **n m** CR	1B 75 48 **n m** 0D	Change attention code ➢ **n** = 1 ~ 20h ➢ **m** = 1 ~ 20h
ESC u I **[DATA]** CR	1B 75 49 **[DATA]** 0D	Two line display ➢ Maximal **[DATA]** length is 40
ESC RS CR	1B 0F 0D	Change to UTC standard mode

AEDEX/EMAX Mode Command List

Command	Code (hex)	Function Description
! # 4 **[DATA]** CR	21 23 34 **[DATA]** 0D	Upper line message scroll ➢ Maximal **[DATA]** length is 40
! # 5 **h h** : **m m** CR	21 23 35 **h h** ':' **m m** 0D	Display time ➢ **h**, **m** = '0' ~ '9'
! # 8 **n m** CR	21 23 38 **n m** 0D	Change attention code ➢ **n**, **m** = 1 ~ 20
! # 9 **[DATA]** CR	21 23 39 **[DATA]** 0D	Two line display ➢ Maximal **[DATA]** length is 40
! # 6 **[DATA]** CR	21 23 36 **[DATA]** 0D	Upper line message scroll once pass ➢ Maximal **[DATA]** length is 40

ADM787/788 mode command list

Command	Code (hex)	Function Description
CLR	0C	Clear display
CR	0D	Carriage return
SLE1	0E	Clear upper line and move cursor to upper left-end position
SLE2	0F	Clear bottom line and move, Cursor to bottom left-end position
DC0 **n**	10 **n**	Set period to upper line last n position ➢ **n** = 31H ~ 37H
DC1 **n**	11 **n**	Set line blinking, upper line ➢ **n** = '1' ~ '2' ■ **n** = '1': up line ■ **n** = '2': low line
DC2 **n**	12 **n**	Clear line blinking, upper line ➢ **n** = '1' ~ '2' ■ **n** = '1': up line ■ **n** = '2': low line
SF1	1E	Clear field 1 and move cursor to field 1, first position
SF2	1F	Clear field 2 and move cursor to field 2, first position

DSP800 Mode Command List

Command	Code (hex)	Function Description
EOT SOH I **n** ETB	04 01 49 **n** 17	Select international character set ➢ **n** = 00 ~ 1Fh or 30 ~ 4Fh See note *[1]
EOT SOH P **n** ETB	04 01 50 **n** 17	Move cursor to specified position ➢ **n** = 31h ~ 58h
EOT SOH C **n m** ETB	04 01 43 **n m** 17	Clear display range from n position to m position and move cursor to n position ➢ 31h ≦ **n** ≦ **m** ≦ 58h
EOT SOH S **n** ETB	04 01 53 **n** 17	Save current view message to n layer for demo view data ➢ **n** = 31h ~ 35h
EOT SOH D **n m** ETB	04 01 44 **n m** 17	Display the saved demo message ➢ **n** = 31h ~ 4Fh ➢ **m** = 31h ~ 33h
EOT SOH A **n** ETB	04 01 41 **n** 17 **n** =31h-34h	Brightness adjustment
EOT SOH F **n** ETB	04 01 46 **n** 17 00h□**n**□FFh	Blink display Screen ➢ **n** = 00h ~ FFh, **n** = 0 for no blink
EOT SOH # **n** ETB	04 01 23 **n** 17 **n** =30~37h	Command type select
EOT SOH % ETB	04 01 25 17	Initialize display
EOT SOH @ ETB	04 01 40 17	Execute self-test
EOT SOH & **n** [**m1~m5**] ETB	04 01 26 **n [m1~m5]** 17	Set One User-Define Character **n** = 20h ~ FFh for displayable character code [**m1 ~ m5**] Byte1~Byte5 Define Character
EOT SOH ? **n** ETB	04 01 3F **n** 17	Delete One User-Define Character **n** = 20h ~ FFh for displayable character code
EOT SOH = **n** ETB	04 01 3D **n** 17	Select peripheral device, display or printer ➢ **n** = '1': enable printer only **n** = '2': enable display only **n** = '3': enable both of printer and display

Note:

1. Select international character set (20H~7Fh) by command "EOT SOH I **n** ETB"

n	International character set	n	International character set	n	International character set
00h	U.S.A.	**05h**	SWEDEN	**0Ah**	DENMARK II
01h	FRANCE	**06h**	ITALY	**0Bh**	SLAVONIC
02h	GERMANY	**07h**	SPAIN	**0Ch**	RUSSIA
03h	U.K.	**08h**	JAPAN		
04h	DENMARK I	**09h**	NORWAY	**1Fh**	User-Define
30h	U.S.A.	**35h**	SWEDEN	**3Ah**	DENMARK II
31h	FRANCE	**36h**	ITALY	**3Bh**	SLAVONIC
32h	GERMANY	**37h**	SPAIN	**3Ch**	RUSSIA
33h	U.K.	**38h**	JAPAN		
34h	DENMARK I	**39h**	NORWAY	**4Fh**	User-Define

EPSON ESC/POS Command List

Command	Code (hex)	Function Description
US r **n**	1F 72 **n**	Select/cancel reverse character. ➢ **n** = 00,01
US MD1	1F 01	Specify overwrite mode.
US MD2	1F 02	Specify vertical scroll mode.
US MD3	1F 03	Specify horizontal scroll mode.
CAN	18	Clear cursor line
ESC # **n**	1B 23 **n**	Command type select ➢ **n** = 30h ~ 37h
US # **n x**	1F 23 **n x**	Turn annunciator on/off. ➢ **n** = 0 for annunciator off **n** = 1 for annunciator on ➢ **x** = 1 ~ 14h, for columns location.
US C **n**	1F 43 **n**	Set cursor on/off ➢ **n** = 00, 01
BS	08	Move cursor left
HT	09	Move cursor right
US LF	1F 0A	Move cursor up
LF	0A	Move cursor down
US CR	1F 0D	Move cursor to right-most position
CR	0D	Move cursor to left-most position
HOM	0B	Move cursor to home position
US B	1F 42	Move cursor to bottom position
US $ **x y**	1F 24 **x y**	Move cursor to specified position ➢ **x** = 1 ~ 14h, for columns location. ➢ **y** = 1 ~ 2, for lines location.
CLR	0C	Clear display screen
US E **n**	1F 45 **n**	Blink display screen ➢ **n** = 00h ~ FFh **n** = 0 for no blink
ESC @	1B 40	Initialize display
US , **n**	1F 2C **n**	Specify comma ➢ **n** = a displayable character code
US . **n**	1F 2E **n**	Specify period ➢ **n** = a displayable character code
US ; **n**	1F 3B **n**	Specify semicolon (period + comma) ➢ **n** = a displayable character code
US :	1F 3A	Set starting/ending position of macro definition. Ex.: 1F 3A … (macro string) … 1F 3A
US ^ **n m**	1F 5E **n m**	Execute and quit macro. It's an interval of n between the two words. It's an interval of m between the two strings. ➢ 00 □ (**n**, **m**) □ FFh ■ **n** = Word time ■ **m** = show string time
US @	1F 40	Execute self - test
US T h m	1F 54 h m	Display time ➢ 0 ≦ h ≦ 17h, for hours setting. ➢ 0 ≦ m ≦ 3Bh, for minutes setting.
US U	1F 55	Display time continuously
US X **n**	1F 58 **n**	Brightness adjustment ➢ **n** = 1 ~ 4

Command	Code (hex)	Function Description
ESC W **n s x1 y1 x2 y2**	1B 57 **n s x1 y1 x2 y2**	Set or cancel the window range ➢ **n** = 1 ~ 4, for window number ➢ **s** = 0: cancel **s** = 1: set ➢ 1 ≦ **x1** ≦ **x2** ≦ 14h, for columns ➢ 1 ≦ **y1** ≦ **y2** ≦ 2, for lines .
ESC R **n**	1B 52 **n**	Select international character set (20H~7Fh). ➢ **n** = 00 ~ 1Fh. See note *[1]
ESC t **n**	1B 74 **n**	Select character code table (80H~FFh). ➢ **n** = 00 ~ 1Fh. See note *[2]
ESC = **n**	1B 3D **n**	Select peripheral device, display or printer **n** = '1': enable printer only **n** = '2': enable display only **n** = '3': enable both of printer and display
ESC % **n**	1B 25 **n**	Set/Cancel User-Define Character Set ➢ **n** = 0: Cancel User-Defined Character Set ➢ **n** = 1: Set User-Define Character Set
ESC & SOH **n m** [**b1~b5**] * **K**	1B 26 01 **n m** [**b1** ~ **b5**] * **K**	Create User-define Character 20h ≤ **n** ≤ **m** ≤ FFh [b1 ~ b5] Byte1~Byte5 Define Character (Ref. ***User-Define Character Command-Set*** 5x7 dot layout) **K** = (m-n+1) → 1 ~ 5, Max. 5 character.
ESC ?	1B 3F	Delete User-Define Character
ESC s SOH	1B 73 01	Store User-Define Character in EEPROM
ESC d SOH	1B 64 01	Load User-Define Character from EEPROM

Note: 1. Select international character set (20H~7Fh) for command “ESC R **n**”

n	international character set	n	international character set	n	international character set
0h	U.S.A.	**6h**	ITALY	**Ch**	RUSSIA
1h	FRANCE	**7h**	SPAIN	**Dh**	Not used
2h	GERMANY	**8h**	JAPAN	**Eh**	Not used
3h	U.K.	**9h**	NORWAY	**Fh**	Not used
4h	DENMARK I	**Ah**	DENMARK II		
5h	SWEDEN	**Bh**	SLAVONIC		

2. Select character code table (80H~FFh) for command “ESC t **n**”

n	character code table	n	character code table	n	character code table
0h	CP-437 (USA, Standard Europe)	**6h**	Slawie	**Ch**	Windows-1251 (Cyrillic)
1h	Katakana (for Japan)	**7h**	Russia	**Eh**	Windows-1255 (Hebrew)
2h	CP-850 (Multilingual)	**8h**	Greek	**Fh**	Windows-1257 (Baltic)
3h	CP-860 (Portuguese)	**9h**	CP-852 (Hungary)	**10h**	Windows-1252
4h	CP-863 (Canadian-French)	**Ah**	CP-862 (Hebrew)	**11h**	Windows-1253 (Greek)
5h	CP-865 (Nordic)	**Bh**	CP-866 (Cyrillic)	**13h**	CP-858 (Multilingual+ Euro Symbol)

Character Set

Character Codes 20H – 7FH
International Character Sets

Character Code Number												
Country \ Hex	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
Country \ Dec	35	36	64	91	92	93	94	96	123	124	125	126
U.S.A	#	$	@	[	\	]	^	`	{	¦	}	~
France	#	$	à	°	ç	§	^	`	é	ù	è	¨
Germany	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	β
U.K	£	$	@	[	\	]	^	`	{	¦	}	~
Denmark I	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~
Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Italy	#	$	@	°	\	é	^	ù	à	ò	è	ì
Spain	Pt	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
Japan	#	$	@	[	¥	]	^	`	{	¦	}	~
Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Denmark II	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Slavonic	#	$	@	[	\	]	^	`	{	¦	}	~
Russia	#	$	@	[	\	]	^	`	{	¦	}	~

USA, Standard Character Sets

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
20h		!	“	#	$	%	&	‘	(	)	*	+	,	-	.	/
30h	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40h	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50h	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60h	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70h	p	q	r	s	t	u	v	w	x	y	Z	{	¦	}	~	

Character Codes 80H – FFH

CP-437 (USA, Standard Europe)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
90h	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	¢	£	¥	Pt	ƒ
A0h	á	í	ó	ú	ñ	Ñ	ª	º	¿	⌐	¬	½	¼	¡	«	»
B0h	░	▒	▓	│	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
C0h	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D0h	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	█	▄	▌	▐	▀
E0h	α	ß	Γ	π	Σ	σ	µ	τ	Φ	θ	Ω	δ	∞	ø	ε	∩
F0h	≡	±	≥	≤	⌠	⌡	÷	≈	°	•	·	√	ⁿ	²	■	

CP-850 (Multilingual)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
90h	É	æ	Æ	ô	ö	ò	û	ù	ÿ	ö	Ü	ø	£	Ø	×	ƒ
A0h	á	í	ó	ú	ñ	Ñ	a	o	¿	®	¬	½	¼	¡	«	»
B0h	░	▒	▓	│	┤	Á	Â	À	©	╣	║	╗	╝	¢	¥	┐
C0h	└	┴	┬	├	─	┼	ã	Ã	╚	╔	╩	╦	╠	═	╬	¤
D0h	ð	Ð	Ê	Ë	È	ı	Í	Î	Ï	┘	┌	█	▄	¦	Ì	▀
E0h	ó	ß	ô	ò	õ	Õ	µ	þ	Þ	Ú	Û	Ù	ý	Ý	¯	´
F0h		±	‗	¾	¶	§	÷	¸	°	¨	·	1	3	2	■	

CP-858 (Multilingual + Euro Symbol)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
90h	É	æ	Æ	ô	ö	ò	û	ù	ÿ	ö	Ü	ø	£	Ø	×	ƒ
A0h	á	í	ó	ú	ñ	Ñ	a	o	¿	®	¬	½	¼	¡	«	»
B0h	░	▒	▓	│	┤	Á	Â	À	©	╣	║	╗	╝	¢	¥	┐
C0h	└	┴	┬	├	─	┼	ã	Ã	╚	╔	╩	╦	╠	═	╬	¤
D0h	ð	Ð	Ê	Ë	È	€	Í	Î	Ï	┘	┌	█	▄	¦	Ì	▀
E0h	ó	ß	ô	ò	õ	Õ	µ	þ	Þ	Ú	Û	Ù	ý	Ý	¯	´
F0h		±	=	¾	¶	§	÷	¸	°	¨	·	1	3	2	■	

Katakana for Japan

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	α	β	γ	⊿	ϵ	η	θ	λ	μ	π	ρ	σ	τ	Φ	Ω	∑
90h	£	§	IE	IR	∫	¯x	Ā	-1	2	3	x	½	1/	√	±	■
A0h		◦	「	」	、	•	ヲ	フ	イ	ウ	エ	オ	ヤ	ユ	ヨ	ッ
B0h	ー	ア	イ	ウ	エ	オ	カ	キ	ク	ケ	コ	サ	シ	ス	セ	ソ
C0h	タ	チ	ツ	テ	ト	ナ	ニ	ヌ	ネ	ノ	ハ	ヒ	フ	ヘ	ホ	マ
D0h	ミ	ム	メ	モ	ヤ	ユ	ヨ	ラ	リ	ル	レ	ロ	ワ	ン	"	◦
E0h	↑	↓	←	→	↵	↳	↱	↰	↤	↦	”	“	«	»	∴	∵
F0h	≤	≥	≠	≒	‖	|	⊥	∞	α	∼	~	≡	∓	♀	⊕	Θ

Slawie

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	Ç	ü	é	â	ä	ů	ć	ç	ļ	ë	õ	õ	î	ź	ä	ć
90h	é	Ĺ	í	ô	ö	Ľ	ĭ	ś	ś	Ö	Ü	ť	ť	ł	x	č
A0h	á	í	ó	ú	ą	ą	ž	ž	ę	ę		ź	č	ş	«	»
B0h	▒	▒	▓	│	┤	á	â	ě	ş					ŧ	ŧ	
C0h					—	┼	ă	ă						═		¤
D0h	đ	đ	ď	ë	ď	ň	í	î	ě			▉	▄	ţ	ů	■
E0h	ó	β	ô	ń	ń	ň	š	š	ŕ	ú	ŕ	ũ	ý	ý	ţ	´
F0h	–	˜	˛	ˇ	˘	§	÷	ډ	°	¨	·	ũ	ř	ř	■	

Russia

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	А	Б	В	Г	Д	Е	Ж	З	и	Й	К	Л	М	Н	О	П
90h	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я
A0h	а	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
B0h																
C0h																
D0h																
E0h	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	Э	ю	я
F0h	*ə*	Ғ	Қ	Ң	ө	Ұ	Ү	Һ	*ə*	ғ	қ	ң	ө	ұ	ү	

CP-860 (Portuguese)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	Ç	ü	é	â	ã	à	Á	ç	ê	Ê	è	Í	Ô	ì	Ã	Â
90h	É	À	È	ô	õ	ò	Ú	ù	Ì	Õ	Ü	¢	£	Ù	Pt	Ó
A0h	á	í	ó	ú	ñ	Ñ	a̲	o	¿	®	¬	½	¼	¡	«	»
B0h	▒	▒	▓	▏	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
C0h	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D0h	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	▉	▄	▌	▐	▀
E0h	α	β	Γ	π	Σ	σ	µ	τ	Φ	θ	Ω	δ	∞	ø	ϵ	∩
F0h	≡	±	≥	≤	⌠	⌡	÷	≈	°	•	·	√	ⁿ	²	■	

Greek

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	A	B	Γ	Δ	E	Z	**H**	Θ	I	K	Λ	M	N	Ξ	O	Π
90h	P	Σ	T	Y	Φ	X	Ψ	Ω	α	β	γ	δ	ε	ζ	η	θ
A0h	ι	κ	λ	µ	ν	ξ	ο	π	ρ	σ	s	τ	υ	φ	χ	ψ
B0h																
C0h																
D0h																
E0h	ω															
F0h										£				-		

CP-852 (Hungary)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	Ç	ű	é	â	ä	ů	ć	ç	ł	ë	Ő	ő	î	Ź	Ä	Ć
90h	É	Ĺ	Í	ô	ö	Ľ	ľ	Ś	ś	Ö	Ü	Ť	ť	Ł	x	Č
A0h	á	í	ó	ú	Ą	ą	Ž	ž	Ę	ę	¬	ź	Č	ş	«	»
B0h	░	▒	▓	│	┤	Á	Â	Ě	Ş	╣	║	╗	╝	ż	ż	┐
C0h	└	┴	┬	├	─	┼	Ä	ă	╚	╔	╩	╦	╠	═	╬	¤
D0h	đ	Đ	Ď	Ë	ď	Ň	Í	Î	ě	┘	┌	█	▄	Ţ	Ů	▀
E0h	Ó	ß	Ô	Ń	ń	ň	Š	š	Ŕ	Ú	ŕ	Ű	ý	Ý	ţ	´
F0h	–	˜	¸	ˇ	˘	§	÷	¸	°	¨	·	ũ	Ř	ř	■	

CP-862 (Hebrew)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	א	ב	ג	ד	ה	ו	ז	ח	ט	י	ך	כ	ל	ם	מ	ן
90h	נ	ס	ע	ף	פ	ץ	צ	ק	ר	ש	ת	¢	£	¥	Pts	*ƒ*
A0h	á	í	ó	ú	ñ	Ñ	ª	º	¿	⌐	¬	½	¼	¡	«	»
B0h	░	▒	▓	│	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
C0h	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D0h	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	█	▄	▌	▐	▀
E0h	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
F0h	≡	±	≥	≤	⌠	⌡	÷	≈	°	∙	·	√	ⁿ	²	■	

CP-863 (Canadian- French)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	Ç	ü	é	â	Â	à	¶	ç	ê	ë	è	ï	î	=	Ä	§
90h	É	È	Ê	ô	Ë	Ï	û	ù	¤	Ô	Ü	¢	£	Ù	Û	*ƒ*
A0h	¦	í	‘	ó	ú	¨	ˬ	¯	Î	⌐	¬	½	¼	¾	«	»
B0h	░	▒	▓	⎸	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
C0h	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D0h	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	▉	▄	▌	▐	▀
E0h	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
F0h	≡	±	≥	≤	⌠	⌡	÷	≈	°	∙	·	√	ⁿ	²	■	

CP-865 (Nordic)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
90h	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø	Pt	*ƒ*
A0h	á	í	ó	ú	ñ	Ñ	ª	º	¿	®	¬	½	¼	¡	«	¤
B0h	░	▒	▓	⎸	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
C0h	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D0h	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	▉	▄	▌	▐	▀
E0h	α	ß	Γ	π	Σ	σ	µ	τ	Φ	θ	Ω	δ	∞	ø	ε	∩
F0h	≡	±	≥	≤	⌠	⌡	÷	≈	°	•	·	√	ⁿ	²	■	

CP-866 (Cyrillic)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	А	Б	В	Г	Д	Е	Ж	З	И	Й	К	Л	М	Н	О	П
90h	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я
A0h	а	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
B0h	░	▒	▓	│	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
C0h	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D0h	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	█	▄	▌	▐	▀
E0h	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э	ю	я
F0h	Ё	ё	Є	є	Ї	ї	Ў	ў	°	∙	·	√	№	¤	■	

Windows-1250

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	€		‚		„	…	†	‡		‰	Š	‹	Ś	Ť	Ž	Ź
90h		‘	’	“	”	•	–	—		™	š	›	ś	ť	ž	ź
A0h		ˇ	˘	Ł	¤	Ą	¦	§	¨	©	Ş	«	¬		®	Ż
B0h	°	±	˛	ł	´	µ	¶	·	¸	ą	ş	»	Ľ	˝	ľ	ż
C0h	Ŕ	Á	Â	Ă	Ä	Ĺ	Ć	Ç	Č	É	Ę	Ë	Ě	Í	Î	Ď
D0h	Đ	Ń	Ň	Ó	Ô	Ő	Ö	×	Ř	Ů	Ú	Ű	Ü	Ý	Ţ	ß
E0h	ŕ	á	â	ă	ä	ĺ	ć	ç	č	é	ę	ë	ě	í	î	ď
F0h	đ	ń	ň	ó	ô	ő	ö	÷	ř	ů	ú	ű	ü	ý	ţ	˙

Windows-1251 (Cyrillic)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	Ђ	Ѓ	‚	ѓ	„	…	†	‡	€	‰	Љ	‹	Њ	Ќ	Ћ	Џ
90h	ђ	‘	’	“	”	•	–	—		™	љ	›	њ	ќ	ћ	џ
A0h		Ў	ў	Ј	¤	Ґ	¦	§	Ё	©	Є	«	¬		®	Ї
B0h	°	±	І	і	ґ	µ	¶	·	ё	№	є	»	ј	Ѕ	ѕ	ї
C0h	А	Б	В	Г	Д	Е	Ж	З	И	Й	К	Л	М	Н	О	П
D0h	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я
E0h	а	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
F0h	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э	ю	я

Windows-1252

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	€		‚	*ƒ*	„	…	†	‡	ˆ	‰	Š	‹	Œ		Ž	
90h		‘	’	“	”	•	–	—	˜	™	š	›	œ		ž	Ÿ
A0h		¡	¢	£	¤	¥	¦	§	¨	©	ª	«	¬		®	¯
B0h	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
C0h	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
D0h	Ð	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
E0h	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
F0h	ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

Windows-1253 (Greek)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	€		,	ƒ	„	…	†	‡		‰		‹				
90h		‘	’	“	”	•	–	—		™		›				
A0h		΅	Ά	£	¤	¥	¦	§	¨	©		«	¬	–	®	―
B0h		±	²	³	΄	µ	¶	·	Έ	Ή	Ί	»	Ό	½	Ύ	Ώ
C0h	ΐ	Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ	Λ	Μ	Ν	Ξ	Ο
D0h	Π	Ρ		Σ	Τ	Υ	Φ	Χ	Ψ	Ω	Ϊ	Ϋ	ά	έ	ή	ί
E0h	ΰ	α	β	γ	δ	ε	ζ	η	θ	ι	κ	Λ	μ	ν	ξ	ο
F0h	π	ρ	ς	σ	τ	υ	φ	χ	ψ	ω	ϊ	ϋ	ό	ύ	ώ	

Windows-1255 (Hebrew)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	€		,	ƒ	„	…	†	‡	ˆ	‰		‹				
90h		‘	’	“	”	•	–	—	˜	™		›				
A0h		¡	¢	£	₪	¥	¦	§	¨	©	×	«	¬	–	®	¯
B0h	°	±	²	³	´	µ	¶	·	¸	¹	÷	»	¼	½	¾	¿
C0h	ְ	ֱ	ֲ	ֳ	ִ	ֵ	ֶ	ַ	ָ	ֹ		ֻ	ּ	ֽ	־	ֿ
D0h	׀	ׁ	ׂ	׃	ׄ	ׅ	׆	ׇ	׈	׉	׊	׋	׌	׍	׎	׏
E0h	א	ב	ג	ד	ה	ו	ז	ח	ט	י	ך	כ	ל	ם	מ	ן
F0h	נ	ס	ע	ף	פ	ץ	צ	ק	ר	ש	ת					

Windows-1257 (Baltic)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	€		‚		„	…	†	‡		‰		‹		¨	ˇ	¸
90h		‘	’	“	”	•	–	—		™		›		¯	˛	
A0h			¢	£	¤		¦	§	Ø	©	Ŗ	«	¬	–	®	Æ
B0h	°	±	²	³	´	µ	¶	·	ø	¹	ŗ	»	¼	½	¾	æ
C0h	Ą	Į	Ā	Ć	Ä	Å	Ę	Ē	Č	É	Ź	Ė	Ģ	Ķ	Ī	Ļ
D0h	Š	Ń	Ņ	Ó	Ō	Õ	Ö	×	Ų	Ł	Ś	Ū	Ü	Ż	Ž	ß
E0h	ą	į	ā	ć	ä	å	ę	ē	č	é	ź	ė	ģ	ķ	ī	ļ
F0h	š	ń	ņ	ó	ō	õ	ö	÷	ų	ł	ś	ū	ü	ż	ž	˙

Command Details

A.1. Overwrite mode

In this mode, the cursor will move towards the right and begin from the upper left position. When the cursor has reached the end of the upper line, the cursor will move down to the bottom left position to continue. When the cursor has reached the end of the bottom line, it will move to up the upper left position and overwrite the previous characters.

A.2. Vertical scroll mode

In this mode, the cursor will move towards the right. The cursor will begin from the upper left position until it has reached the end of the upper line. The cursor will then move down to the bottom left position to continue until it has reached the end of the bottom line.

A.3. Horizontal scroll mode

In this mode, the extent of the cursor activity is bound by a predefined range, limited to the upper line. (Please refer to Set or cancel window command), where the default window is the whole upper line. The cursor will begin from the left-end of the range and move rightward until it reached the end of the range, to continue, the characters that comes thereafter will start pushing the previous characters leftward from the right-end, scrolling the characters to the left.

A.4. Set the string display mode and write string to display

Set the string display mode, write to upper or lower line d1 d2 d3 … dn {$1 \leqq n \leqq 20$}. 'A' stands for the upper line, 'B' stands for the lower line. The string display mode will be cancelled and the display will return to the previous mode after receiving CLR or CAN.

A.5. Upper line message continuous scroll

The message (previously defined) will scroll continuously in the horizontal direction until a new command is received.

A.6. Move cursor left

When the current cursor is at the left-end position, this command operates differently depending on the display mode.

- **Overwrite mode:** When the cursor reached the left-end of the lower line, it will continue to the right-end of the upper line, overwrite previous characters. When it reached the left end of the upper line, it will continue to the right-end of the lower line.
- **Vertical scroll mode:** When the cursor reached the left-end of the lower line, the lower line will scroll up and replace the previous upper line, the lower line will be cleared and the cursor will continue to the right end of the lower line.
- **Horizontal scroll mode:** The cursor will remain stationary.

A.7. Move cursor right

Move the cursor to the right. When the cursor has reached the right-end, this command operates differently depending on the display mode.

- **Overwrite mode:** When the cursor has reached the right-end of the lower line, it will continue to the left-end of the upper line and overwrite previous characters. When it has reached the right-end of the upper line, it will continue to the right-end of the lower line.
- **Vertical scroll mode:** When the cursor has reached the right-end of the lower line, the lower line will scroll up to replace the upper line, the lower line is cleared and ready to continue characters thereafter.
- **Horizontal scroll mode:** The cursor will remain stationary.

A.8. Move cursor up

Move the cursor up one line. When the cursor is on the upper line, this command operates differently depending on the display mode.

- **Overwrite mode:** The cursor is moved to the same column the lower line.
- **Vertical scroll mode:** The characters displayed on the upper line is scrolled to the lower line, and the upper line is cleared. The cursor will remain at the same position.
- **Horizontal scroll mode:** The cursor will remain stationary.

A.9. Move cursor down

Move the cursor down one line. When the cursor is on the lower line, this command operates differently depending on the display mode.

- **Overwrite mode:** The cursor is moved to the same column on the upper line.
- **Vertical scroll mode:** The characters displayed on the lower line are scrolled to the upper line, and the lower line is cleared. The cursor will remain at the same position.
- **Horizontal scroll mode:** The cursor will remain stationary.

A.10. Move cursor to home position

The cursor will move to the left-end position of the upper line.

A.11. Move cursor to left-most position

The cursor will be moved to the left-end position of the current line.

A.12. Move cursor to right-most position

The cursor will be moved to the right-end position of the current line.

A.13. Move cursor to bottom position

The cursor will be moved to the right-end position on the lower line.

A.14. Move cursor to specified position

The cursor will be moved to column x on line y.

A.15. Initialize display

The data in the input buffer will be cleared and reset from default.

A.16. Reset the window

Reset the window on the display.

When s=0, the window is cancelled (values: x1, x2, and y are not required.)

When s=1, the window will be reset (values: x1, x2, and y are required.)

The x1 and x2 set the position of the left column and right column, respectively, of the window.

The y sets the upper line or the lower line of the window.

This function is valid within the horizontal mode.

A.17. Clear display screen and clear string mode

All the display characters will be cleared, and the string mode will be cancelled.

A.18. Clear current line and cancel string mode

The current line is cleared, and the string mode is cancelled.

A.19. Brightness adjustment

Adjust the brightness of the vacuum fluorescent display.

When n=3, brightness=70%

When n=4, brightness=100%

A.20. Set cursor ON or OFF

When n=0, cursor is OFF

When n=1, cursor is ON

Control Code Set

HEX	CODE	HEX	CODE
00H	NULL	10H	DLE
01H	SOH, MD1	11H	DC1
02H	STX, MD2	12H	DC2
03H	ETX, MD3	13H	DC3
04H	EOT, MD4	14H	DC4
05H	ENQ, MD5	15H	NAK
06H	ACK, MD6	16H	SYN
07H	BEL, MD7	17H	ETB
08H	BS, MD8	18H	CAN
09H	HT	19H	EM
0AH	LF	1AH	SUB
0BH	VT, HOM	1BH	ESC
0CH	FF, CLR	1CH	FS
0DH	CR	1DH	GS
0EH	SO, SLE1	1EH	RS, SF1
0FH	SI, SLE2	1FH	US, SF2